

## Andrei Gritsan

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### Professional Appointments

Johns Hopkins University, Physics and Astronomy Department, Baltimore, MD  
Professor, since 2016; Associate Professor, 2012–2016; Assistant Professor, 2005–2012

Lawrence Berkeley National Laboratory, Physics Division, Berkeley, CA  
Postdoctoral Fellow, 2000 – 2005

University of Colorado at Boulder, Physics Department, Boulder, CO  
Research Assistant, 1996 – 2000

Budker Institute for Nuclear Physics, Novosibirsk, Russia  
Research Assistant, 1993 – 1996

### Professional Affiliations

CERN – European Organization for Nuclear Research, Geneva, Switzerland  
Visiting Scientist, CMS experiment at LHC, 2006 – present

FNAL – Fermi National Accelerator Laboratory, Batavia, IL  
Visiting Scientist, LHC Physics Center, 2005 – present

SLAC National Accelerator Laboratory, Stanford University, Palo Alto, CA  
Visiting Fellow, *BABAR* experiment at PEP-II, 2000 – 2008

Wilson Synchrotron Laboratory, Cornell University, Ithaca, NY  
Visiting Scholar, CLEO experiment at CESR, 1996 – 2000

### Education

University of Colorado at Boulder, Boulder, CO, 1996 – 2000  
Ph.D. in Physics, Particle Physics, G.P.A. 4.0/4.0

Novosibirsk State University, Novosibirsk, Russia, 1990 – 1996  
M.S. (1996) and B.S. (1994) in Physics, Particle Physics, G.P.A. 5.0/5.0

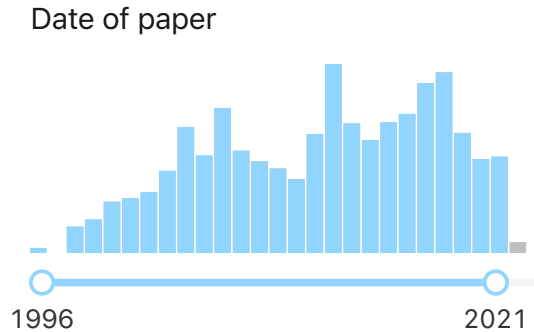
### Recent Awards

- Fellow of the American Physical Society, 2019 (For significant contributions to the discovery and to the characterization of the Higgs Boson at the CERN Large Hadron Collider, and for significant contributions to the measurement of  $\sin 2\alpha$  at the SLAC PEP II collider)
- European Physical Society's High Energy and Particle Physics Prize, 2013 (For the discovery of a Higgs boson, as predicted by the Brout-Englert-Higgs mechanism), shared by the ATLAS and CMS collaborations
- US DOE/NSF LHC Physics Center at Fermilab Distinguished Researcher, 2012
- US National Science Foundation CAREER Award, 2007
- Alfred P. Sloan Foundation Research Fellow, 2007

## Scientific Publications

iNSPIREhep online database: 1007500  
Scopus Author ID: 35227243500  
ORCID ID: 0000-0002-3545-7970  
Google Scholar Profile: BczL-9YAAAAJ

Total (1996-2022): 2118  
CMS experiment: 1145  
BABAR experiment: 813  
CLEO experiment: 95  
SND experiment: 3  
Phenomenology (hep-ph): 16  
Particle Data Group: 8  
LHC Higgs Working Group: 3



More than 2000 papers in several collaborations. Below some of the highlighted publications with the most direct impact by A. Gritsan and his team are listed.

### Highlighted publications

77. S. Dawson, *et al.* “Report of the Topical Group on Higgs Physics for Snowmass 2021: The Case for Precision Higgs Physics,” arXiv:2209.07510.
76. “A portrait of the Higgs boson by the CMS experiment ten years after the discovery,” CMS Collaboration, *Nature* **607**, 60 (2022).
75. “Polarization in  $B$  Decays,” A. V. Gritsan, review article in “The Review of Particle Physics,” Particle Data Group, *Prog. Theor. Exp. Phys.* 2022, 083C01 (2022).
74. “Snowmass White Paper: Prospects of  $CP$ -violation measurements with the Higgs boson at future experiments,” A. V. Gritsan *et al.*, preprint arXiv:2205.07715.
73. “Constraints on anomalous Higgs boson couplings to vector bosons and fermions in its production with associated particles using the  $H \rightarrow \tau\tau$  final state,” CMS Collaboration, preprint arXiv:2205.05120, to appear in *Phys. Rev. D*.
72. “Off-shell Higgs Interpretations Task Force: Models and Effective Field Theories Subgroup Report,” A. Azatov, J. de Blas, A. Falkowski, A. V. Gritsan, C. Grojean, L. Kang, N. Kauer, E. Salvioni, U. Sarica, M. Thomas, and E. Vryonidou, preprint LHCHWG-2022-001, arXiv:2203.02418.
71. “Measurement of the Higgs boson width and evidence of its off-shell contributions to  $ZZ$  production,” CMS Collaboration, preprint arXiv:2202.06923, to appear in *Nature Physics*.
70. “Strategies and performance of the CMS silicon tracker alignment during LHC Run 2,” CMS Collaboration, *Nucl. Instrum. Methods A* **1037**, 166795 (2022).

69. “Constraining anomalous Higgs boson couplings to virtual photons,” J. Davis, A. V. Gritsan, L. S. Mandacaru Guerra, S. Kyriacou, J. Roskes, and M. Schulze, *Phys. Rev. D* **105**, 096027 (2022).
68. “Constraints on anomalous Higgs boson couplings to vector bosons and fermions in production and decay in the  $H \rightarrow 4\ell$  channel,” CMS Collaboration, *Phys. Rev. D* **104**, 052004 (2021).
67. “Measurements of properties of the Higgs boson in the four-lepton final state in proton collisions at  $\sqrt{s} = 13$  TeV,” CMS Collaboration, *Eur. Phys. J. C* **81**, 488 (2021).
66. “Polarization in  $B$  Decays,” A. V. Gritsan, review article, in Particle Data Group, “Review of particle physics,” *Prog. Theor. Exp. Phys.* **2020**, 083C01 (2020).
65. “Measurements of  $t\bar{t}H$  production and the CP structure of the Yukawa interaction between the Higgs boson and top quark in the diphoton decay channel,” CMS Collaboration, *Phys. Rev. Lett.* **125**, 061801 (2020).
64. “New features in the JHU generator framework: constraining Higgs boson properties from on-shell and off-shell production,” A. V. Gritsan, J. Roskes, U. Sarica, M. Schulze, M. Xiao, and Y. Zhou, *Phys. Rev. D* **102**, 056022 (2020).
63. “Higgs Physics at the High-Luminosity LHC and High-Energy LHC,” M. Cepeda *et al.*, *CERN Yellow Rep. Monogr.* **7**, 221 (2019), arXiv:1902.00134.
62. “Measurements of Higgs boson width and anomalous HVV couplings from on-shell and off-shell production in the four-lepton final state,” CMS Collaboration, *Phys. Rev. D* **99**, 112003 (2019).
61. “Constraints on anomalous HVV couplings in the production of Higgs bosons decaying to tau lepton pairs,” CMS Collaboration, *Phys. Rev. D* **100**, 112002 (2019).
60. “Polarization in  $B$  Decays,” A. V. Gritsan, review article, in Particle Data Group, “Review of particle physics,” *Phys. Rev. D* **98**, 030001 (2018).
59. “Search for a new scalar resonance decaying to a pair of Z bosons in proton-proton collisions at  $\sqrt{s} = 13$  TeV,” CMS Collaboration, *JHEP* **06**, 127 (2018).
58. “Constraints on anomalous Higgs boson couplings using production and decay information in the four-lepton final state,” CMS Collaboration, *Phys. Lett. B* **775**, 1 (2017)
57. “Measurements of properties of the Higgs boson decaying into the four-lepton final state in pp collisions at  $\sqrt{s} = 13$  TeV,” CMS Collaboration, *JHEP* **1711**, 047 (2017)
56. “Handbook of LHC Higgs Cross Sections 4,” LHC Higgs Cross Section Working Group Collaboration, *CERN Yellow Rep. Monogr.* **2** (2017), arXiv:1610.07922.
55. “Constraining anomalous Higgs boson couplings to the heavy flavor fermions using matrix element techniques,” A. V. Gritsan, R. Rontsch, M. Schulze, M. Xiao, *Phys. Rev. D* **94**, 055023 (2016).
54. “Polarization in  $B$  Decays,” A. V. Gritsan, review article, in Particle Data Group, “Review of particle physics,” *Chin. Phys. C* **40**, 100001 (2016).

53. "Combined search for anomalous pseudoscalar  $HVV$  couplings in  $VH$  production and  $H \rightarrow VV$  decay," CMS Collaboration, Phys. Lett. B **759**, 672 (2016).
52. "Limits on the Higgs boson lifetime and width from its decay to four charged leptons," CMS Collaboration, Phys. Rev. D **92**, 072010 (2015).
51. "Search for a Higgs boson in the mass range from 145 to 1000 GeV decaying to a pair of W or Z bosons," CMS Collaboration, Journal of High Energy Physics (JHEP) **10**, 144 (2015).
50. "Constraints on the spin-parity and anomalous HVV couplings of the Higgs boson in proton collisions at 7 and 8 TeV," CMS Collaboration, Phys. Rev. D **92**, 012004 (2015).
49. "Polarization in  $B$  Decays," A. V. Gritsan and J. G. Smith, review article in Particle Data Group, "Review of particle physics," Chin. Phys. C **38**, 090001 (2014).
48. "The Physics of the B Factories," A. J. Bevan *et al.*, SLAC-PUB-15968, KEK Preprint 2014-3, arXiv:1406.6311.
47. "Constraints on the Higgs boson width from off-shell production and decay to Z-boson pairs," CMS Collaboration, Phys. Lett. B **736**, 64 (2014).
46. "Measurement of the properties of a Higgs boson in the four-lepton final state," CMS Collaboration, Phys. Rev. D **89**, 092007 (2014).
45. "Constraining anomalous HVV interactions at proton and lepton colliders," I. Anderson, S. Bolognesi, F. Caola, Y. Gao, A. V. Gritsan, C. B. Martin, K. Melnikov and M. Schulze, A. Whitbeck, and Y. Zhou, Phys. Rev. D **89**, 035007 (2014).
44. "Planning the Future of U.S. Particle Physics (Snowmass 2013): Chapter 3: Energy Frontier," R. Brock *et al.*, preprint arXiv:1401.6081.
43. "Higgs Working Group Report of the Snowmass 2013 Community Planning Study," S. Dawson, A. Gritsan, H. Logan, J. Qian, C. Tully, R. Van Kooten *et al.*, preprint arXiv:1310.8361.
42. "Handbook of LHC Higgs Cross Sections 3: Higgs Properties," LHC Higgs Cross Section Working Group Collaboration, CERN Yellow Rep. Monogr. **5** (2013), arXiv:1307.1347.
41. "Study of the Mass and Spin-Parity of the Higgs Boson Candidate via Its Decays to Z Boson Pairs," CMS Collaboration, Phys. Rev. Lett. **110**, 081803 (2013).
40. "Search for a narrow spin-2 resonance decaying to a pair of Z vector bosons in the semileptonic final state," CMS Collaboration, Phys. Lett. B **718**, 1208 (2013).
39. "Observation of a new boson at a mass of 125 GeV with the CMS experiment at the LHC," CMS Collaboration, Phys. Lett. B **716**, 30 (2012).
38. "On the spin and parity of a single-produced resonance at the LHC," S. Bolognesi, Y. Gao, A. V. Gritsan, K. Melnikov, M. Schulze, N. V. Tran, A. Whitbeck, Phys. Rev. D **86**, 095031 (2012).

37. "Polarization in  $B$  Decays," A. V. Gritsan and J. G. Smith, review article, in Particle Data Group, "Review of particle physics," Phys. Rev. D **86**, 010001 (2012).
36. "Search for a Higgs boson in the decay channel  $H \rightarrow ZZ^{(*)} \rightarrow q\bar{q}\ell^{-}\ell^{+}$  in pp collisions at  $\sqrt{s} = 7$  TeV," CMS Collaboration, Journal of High Energy Physics (JHEP) **04**, 036 (2012).
35. "Search for a standard model Higgs boson in the decay channel  $H \rightarrow ZZ^{(*)} \rightarrow 4\ell$  in pp collisions at  $\sqrt{s} = 7$  TeV," CMS Collaboration, Phys. Rev. Lett. **108**, 111804 (2012) .
34. "Combined results of searches for the standard model Higgs boson in pp collisions at  $\sqrt{s} = 7$  TeV," CMS Collaboration, Phys. Lett. B **710**, 26 (2012).
33. "Measurement of the weak mixing angle with the Drell–Yan process in proton-proton collisions at the LHC," CMS Collaboration, Phys. Rev. D **84**, 112002 (2011).
32. "Alignment of the CMS Silicon Tracker during Commissioning with Cosmic Rays," CMS Collaboration, Journal of Instrumentation (JINST) **5**, T03009 (2010),
31. "Polarization in  $B$  Decays," A. V. Gritsan and J. G. Smith, review article, page 967 of Particle Data Group, "Review of particle physics," J. Phys. G **37**, 075021 (2010).
30. "Spin determination of single-produced resonances at hadron colliders," Y. Gao, A. V. Gritsan, Z. Guo, K. Melnikov, M. Schulze, N. V. Tran, Phys. Rev. D **81**, 075022 (2010).
29. "CMS Tracker Alignment at Integration Facility," CMS Tracker Collaboration, JINST **4**, T07001 (2009),
28. "Local Alignment of the *BABAR* Silicon Vertex Tracking Detector," D. N. Brown, A. V. Gritsan, Z. J. Guo, and D. Roberts, Nucl. Instr. Methods Phys. Res. A **603**, 467 (2009).
27. "Polarization in  $B$  Decays," A. V. Gritsan and J. G. Smith, review article, page 910 of Particle Data Group, "Review of particle physics," Phys. Lett. B **667**, 1 (2008).
26. "Study of Polarization in  $B \rightarrow VT$  Decays," A. Datta, Y. Gao, A. V. Gritsan, D. London, M. Nagashima and A. Szykman, Phys. Rev. D **77**, 114025 (2008).
25. "Time-dependent and time-integrated angular analysis of  $B \rightarrow \varphi K_S^0 \pi^0$  and  $\varphi K^{\pm} \pi^{\mp}$ ," *BABAR* Collaboration, Phys. Rev. D **78**, 092008 (2008).
24. "Observation and Polarization Measurements of  $B^{\pm} \rightarrow \varphi K_1^{\pm}$  and  $B^{\pm} \rightarrow \varphi K_2^{*\pm}$ ," *BABAR* Collaboration, Phys. Rev. Lett. **101**, 161801 (2008).
23. "Measurement of the Branching Fraction, Polarization, and CP Asymmetries in  $B^0 \rightarrow \rho^0 \rho^0$  Decay, and Implications for the CKM Angle  $\alpha$ ," *BABAR* collaboration, Phys. Rev. D **78**, 071104 (2008).
22. "Study of B Meson Decays with Excited  $\eta$  and  $\eta'$  Mesons," *BABAR* collaboration, Phys. Rev. Lett. **101**, 091801 (2008).
21. "Amplitude analysis of the  $B^{\pm} \rightarrow \varphi K^{*\pm}(892)$  decay," *BABAR* Collaboration, Phys. Rev. Lett. **99**, 201802 (2007).

20. "Search for  $B^0 \rightarrow \varphi(K^+\pi^-)$  decays with large  $K^+\pi^-$  invariant mass," *BABAR* Collaboration, Phys. Rev. D **76**, 051103 (2007).
19. "Vector-Tensor and Vector-Vector Decay Amplitude Analysis of  $B^0 \rightarrow \varphi K^{*0}$ ," *BABAR* Collaboration, Phys. Rev. Lett. **98**, 051801 (2007).
18. "Testing Explanations of the  $B \rightarrow \varphi K^*$  Polarization Puzzle," A. Datta, A. V. Gritsan, D. London, M. Nagashima and A. Szykman, Phys. Rev. D **76**, 034015 (2007).
17. "Evidence for the  $B^0 \rightarrow \rho^0\rho^0$  Decay and Implications for the CKM Angle  $\alpha$ ," *BABAR* collaboration, Phys. Rev. Lett. **98**, 111801 (2007).
16. "Polarization in  $B$  decays", A. V. Gritsan and J.G. Smith, review article, page 833 of Particle Data Group, "Review of particle physics," J. Phys. G **33**, 1 (2006).
15. "Measurements of Branching Fractions, Polarizations, and Direct  $CP$ -violation Asymmetries in  $B \rightarrow \rho K^*$  and  $B \rightarrow f_0(980)K^*$  Decays," *BABAR* Collaboration, Phys. Rev. Lett. **97**, 201801 (2006).
14. "Limit on the  $B^0 \rightarrow \rho^0\rho^0$  Branching Fraction and Implications for the CKM Angle  $\alpha$ ," *BABAR* collaboration, Phys. Rev. Lett. **94**, 131801 (2005).
13. "The Discovery Potential of a Super B Factory," J. L. Hewett *et al.*, report SLAC-R-709, arXiv:hep-ph/0503261
12. "Measurement of the  $B^0 \rightarrow \varphi K^{*0}$  Decay Amplitudes," *BABAR* collaboration, Phys. Rev. Lett. **93**, 231804 (2004).
11. "Observation of the Decay  $B^0 \rightarrow \rho^+\rho^-$  and Measurement of the Branching Fraction and Polarization," *BABAR* collaboration, Phys. Rev. D **69**, 031102 (2004).
10. "Measurements of Branching Fractions in  $B \rightarrow \varphi K$  and  $B \rightarrow \varphi\pi$  and Search for Direct  $CP$  Violation in  $B^\pm \rightarrow \varphi K^\pm$ ," *BABAR* collaboration, Phys. Rev. D **69**, 011102 (2004).
9. "Rates, Polarizations, and Asymmetries in Charmless Vector-Vector  $B$  Decays," *BABAR* collaboration, Phys. Rev. Lett. **91**, 171802 (2003).
8. "Direct  $CP$  Violation Searches in Charmless Hadronic  $B$  Meson Decays," *BABAR* collaboration, Phys. Rev. D **65**, 051101 (2002).
7. "Report of Snowmass 2001 Working Group E2: Electron-positron Colliders from the  $\phi$  to the  $Z$ ," Z. Zhao *et al.*, preprint arXiv:hep-ex/0201047.
6. "Measurement of the Decays  $B \rightarrow \varphi K$  and  $B \rightarrow \varphi K^*$ ," *BABAR* collaboration, Phys. Rev. Lett. **87**, 151801 (2001).
5. "Two-body  $B$  Meson Decays to  $\eta$  and  $\eta'$ : Observation of  $B \rightarrow \eta K^*$ . CLEO collaboration, Phys. Rev. Lett. **85**, 520 (2000).
4. "Measurement of Charge Asymmetry in Charmless Hadronic  $B$  Meson Decays," CLEO collaboration, Phys. Rev. Lett. **85**, 525 (2000).
3. "Observation of  $B^+ \rightarrow \omega K^+$  and Search for Related Modes," CLEO collaboration, Phys. Rev. Lett. **81**, 272 (1998).

2. "Two-body  $B$  Meson Decays to  $\eta$  and  $\eta'$ : Observation of  $B \rightarrow \eta' K$ ," CLEO collaboration, Phys. Rev. Lett. **80**, 3710 (1998).
1. "The SND Calorimeter First Level Trigger," D.A. Bukin *et al.*, Nucl. Instrum. Methods Phys. Res., Sect. A, **379**, 545 (1996).

### Talks at conferences, colloquia, and seminars

135. "Perspectives on Higgs CP from Snowmass Studies," LHC Higgs Physics Group Meeting (WG2), September 2022.
134. "Future colliders and the Higgs boson Properties," Particle Physics Seminar at the Johns Hopkins University, Baltimore, MD, September 2022.
133. "Quantum Physics," Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July 2022.
132. "CP violation at future colliders," Meetings on the Future of Energy Frontier of Particle Physics (Snowmass), University of Washington, Seattle, WA, July 2022.
131. "Outlook of the LHC EFT WG activities," 4th General Meeting of the LHC Effective Field Theory Working Group, May 2022.
130. "How to constraint effective theories connecting Higgs to matter, energy, or the unknown," Particle Physics Seminar at the Johns Hopkins University, Baltimore, MD, February 2022.
129. "Shining light on the Higgs: the Higgs boson anomalous couplings," International Meeting on Effective Pathways to New Physics, Institute of Physics, Bhubaneswar, India (remote), February 2022.
128. "Shining light on the Higgs: the Higgs boson anomalous couplings," Particle Physics Colloquium at Karlsruhe Institute of Technology, Germany, December 2021.
127. "Matrix-Element Methods for EFT and CP measurements with the H boson," LHC Higgs Physics Group Meeting (WG2), December 2021.
126. "Interference and finite width effects in di-boson resonance searches with the JHUGen framework," LHC Higgs Physics Group Meeting (WG3), November 2021.
125. "Summary of CMS and ATLAS Higgs(125) fermion decays results," Higgs Hunting Workshop, LAL at Orsay and LPNHE at Universite Pierre et Marie Curie in Paris, France, September 2021.
124. "Status of Higgs CP Studies," US Energy Frontier Workshop (Snowmass), September 2021.
123. "Understanding the emptiness: the Higgs field and beyond," Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July 2021.

122. "Introduction to the General Meeting of the LHC EFT WG," 2nd General Meeting of the LHC Effective Field Theory Working Group, May 2021.
121. "Final words of the 17th Workshop of the LHC Higgs Working Group," 17th Workshop of the LHC Higgs Working Group, November 2020.
120. "Understanding the emptiness: the Higgs field and beyond," Colloquium at the Department of Physics and Astronomy, Johns Hopkins University, Baltimore, MD, October 2020.
119. "LHC EFT WG targets and goals: Experimental measurements and observables," First General Meeting of the LHC EFT Working Group, October 2020.
118. "Off-shell Higgs EFT measurements with the JHUGen+MCFM framework," LHC Higgs Physics Group Meeting, October 2020.
117. "EFT fits: Open questions and ideas for Snowmass-2021," Snowmass Energy Frontier Meeting, September 2020.
116. "A Virtual Trip to ICHEP-2020: the Science Festival and the Higgs Boson," Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, August 2020.
115. "An Outreach to the Public: Science of the Large Hadron Collider Exhibit," International Conference on High Energy Physics (ICHEP-2020), August 2020.
114. "Dedicated Higgs anomalous couplings analyses and EFT fits," LHC Higgs Physics Group Meeting, July 2020.
113. "CP-violating Higgs Couplings," Snowmass Energy Frontier Meeting, June 2020.
112. "Off-shell  $H^*(125)$  measurements: perspective from CMS and EFT strategy," LHC Higgs Physics Group Meeting, November 2019.
111. "Possible Future Collider Experiments in Particle Physics," Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July 2019.
110. "The Higgs, gauge bosons, and top quark at LHC," invited plenary talk at the Phenomenology Symposium, University of Pittsburgh, Pittsburgh, PA, May 2019.
109. "Electroweak physics at the LHC: the Higgs, gauge bosons, and top quark," Particle Physics Seminar at the Johns Hopkins University, Baltimore, MD, May 2019.
108. "Understanding emptiness: the Higgs field and beyond," Colloquium at the Department of Physics, Kansas State University, Manhattan, KS, November 2018.
107. "Understanding emptiness: Particle Physics and Cosmology," RASA-America Conference, George Washington University, Washington DC, November 2018.
106. "What and why we learn about the Higgs boson properties from the LHC," Particle Physics, Astrophysics, and Cosmology Center seminar, University of Pittsburgh, Pittsburgh, PA, September 2018.
105. "Connecting the Standard Models of Particle Physics and Cosmology," Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July – August 2018.



104. "LHC exhibit at the US Science and Engineering Festival in Washington DC," Communications Meeting at CERN, Geneva, Switzerland, June 2018.
103. "What and why we learn about the Higgs boson properties from the LHC," High Energy Physics seminar, Princeton University, Princeton, NJ, May 2018.
102. "Study of the Higgs Field," Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July – August 2017.
101. "Summary of results on the H(125) decays to bosons," Higgs Hunting Workshop, LAL at Orsay and LPNHE at Universite Pierre et Marie Curie in Paris, France, July 2017.
100. "Higgs boson properties: what we learn from Run II of LHC," seminar at Brookhaven National Laboratory, Upton, NY, May 2017.
99. "Higgs boson properties: what we learn from Run II of LHC," seminar at LHC Physics Center, Fermi National Accelerator Laboratory, Batavia, IL, April 2017.
98. "Higgs boson properties: what we learn from Run II of LHC," Particle Physics Seminar at the Johns Hopkins University, Baltimore, MD, April 2017.
97. "The H(125) boson properties at CMS," Aspen Winter Conference, "From the LHC to Dark Matter and Beyond," Aspen, Colorado, March 2017.
96. "Hunting for elusive particles at LHC: Start of Run II," Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July – August 2016.
95. "Measurements of the Higgs boson properties at CMS," Mitchell Workshop on Collider, Dark Matter and Neutrino Physics, Texas A&M University, May 2016.
94. "Noise and Resonances at LHC," Johns Hopkins Workshops on Current Problems in Particle Theory, Baltimore, MD, May 2016.
93. "Summary of the Higgs boson standard model and anomalous couplings," Higgs Hunting Workshop, LAL Orsay, France, July 2015.
92. "Matter in Space and Time: What Do We Know?" Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July 2015.
91. "Mass, width, and quantum numbers: everything about the Higgs boson with 20 events," Particle Physics Seminar at the University of Virginia, Charlottesville, VA, January 2015.
90. "Mass, width, and quantum numbers: everything about the Higgs boson with 20 events," Particle Physics Seminar at the Johns Hopkins University, Baltimore, MD, November 2014.
89. "The Higgs boson mass, width, quantum numbers: recent results from CMS," seminar at the University of Rochester, Rochester, NY, October 2014.
88. "What is the Higgs boson and why do some call it the God Particle," Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July – August 2014.
87. "How Wide is the Higgs Boson: Off-shell Constraints from CMS," seminar at Lawrence Berkeley National Laboratory, Berkeley, CA, May 2014.

86. "How Wide is the Higgs Boson: Off-shell Constraints from CMS," seminar at SLAC National Accelerator Laboratory, Stanford University, Palo Alto, CA, May 2014.
85. "What is the Higgs boson and why do some call it the God Particle," Odyssey Public Lecture Series, Johns Hopkins University, Baltimore, MD, April 2014.
84. "Spin and  $CP$ -mixture of a Higgs Boson at CMS," Higgs Couplings Workshop, Freiburg, Germany, October 2013.
83. "Higgs Boson Spin and  $CP$  Mixture Properties," Meetings on the Future of Energy Frontier of Particle Physics (Snowmass), University of Minnesota, Minneapolis, MN, August 2013.
82. "Science of the Nuclear Energy," Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July – August 2013.
81. "Working Group Report on the Studies of the Higgs Boson," Meetings on the Future of Energy Frontier of Particle Physics (Snowmass), University of Washington, Seattle, WA, July 2013.
80. "Higgs Boson Spin and  $CP$  Mixture Properties," Meetings on the Future of Energy Frontier of Particle Physics (Snowmass), University of Washington, Seattle, WA, July 2013.
79. "The Physics Case for the Energy Frontier," Panel presentation at the Meeting on the Future of Energy Frontier of Particle Physics (Snowmass), Brookhaven National Laboratory, Upton, NY, April 2013.
78. "The Weak Mixing Angle at LHC and CMS Experience," Meeting on the Future of Energy Frontier of Particle Physics (Snowmass), Brookhaven National Laboratory, Upton, NY, April 2013.
77. "Higgs Spin and  $CP$  Mixture Overview," Meeting on the Future of Energy Frontier of Particle Physics (Snowmass), Brookhaven National Laboratory, Upton, NY, April 2013.
76. "The Hunt for the Elusive Higgs Boson," Colloquium at the Johns Hopkins University, Baltimore, MD, November 2012.
75. "Tools for the Higgs Boson Property Measurements: MELA and JHUGen," Higgs Couplings Workshop, Tokyo, Japan, November 2012.
74. "On the Spin and Parity of the New Boson at the LHC," Seminar at the LEPP Journal Club, Cornell University, Ithaca, NY, October 2012.
73. "A discovery in the search for the Higgs boson at CMS," seminar at SLAC National Accelerator Laboratory, Palo Alto, CA, August 9, 2012.
72. "A discovery in the hunt for the elusive Higgs boson," Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July – August 2012.
71. "A discovery in the search for the Higgs boson at CMS," seminar at Lawrence Berkeley National Laboratory, Berkeley, CA, July 17, 2012.

70. "A discovery in the search for the Higgs boson at CMS," Joint Experimental-Theoretical Seminar (Wine-and-Cheese Seminar), Fermi National Accelerator Laboratory, Batavia, IL, July 9, 2012.
69. "A discovery in the search for an illusive Higgs boson," Johns Hopkins University Seminar, Baltimore, MD, July 6, 2012.
68. "The Higgs  $\rightarrow ZZ$  Channel," Workshop "The Next Stretch of the Higgs Magnificent Mile," Northwestern University, Chicago, IL, May 2012.
67. "Hints of the Light Higgs Boson at CMS," Workshop on Light Higgs and Implications for the Search for New Physics at the LHC, University of Pittsburgh, PA, January 2012.
66. "The Big Bang Theory and Puzzles of the Universe," Lectures at the Renaissance Weekend, Charleston, SC, December 2011.
65. "Science of Nuclear Energy," Seminar at the Renaissance Weekend, Charleston, SC, December 2011.
64. "Latest news on the Higgs boson search at the LHC," Seminar at the Johns Hopkins University, Baltimore, MD, December 2011.
63. "The heavy invisible light from the Large Hadron Collider," Colloquium at the Johns Hopkins University, Baltimore, MD, September 2011.
62. "Search for the Higgs boson with the CMS detector at the LHC," Particle Physics Seminar at the Johns Hopkins University, Baltimore, MD, August 2011.
61. "Searches for the Higgs boson with the CMS Experiment," 15th Lomonosov Conference on Elementary Particle Physics, Moscow, Russia, August 2011.
60. "Status of LHC and the Higgs search," Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July – August 2011.
59. "First Study of Di-Lepton Forward-Backward Asymmetry and Measurement of  $\sin^2 \theta_W$  at CMS," LHC Workshop on Precision Electroweak Measurements, CERN, Geneva, Switzerland, April 2011.
58. "Space-time," Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July – August 2010.
57. "Spin determination of single-produced resonances at hadron colliders," MCTP Spring Symposium on Higgs Boson Physics, Ann Arbor, MI, May 2010.
56. "Spin determination of single-produced resonances at LHC," seminar at Lawrence Berkeley National Laboratory, Berkeley, CA, May 2010.
55. "Spin determination of single-produced resonances at LHC," seminar at SLAC National Accelerator Laboratory, Palo Alto, CA, May 2010.
54. "Spin determination of single-produced resonances at LHC," seminar at University of California, Davis, CA, May 2010.

53. "The Power of Spin Correlations: from  $B$ -decays to Higgs and Beyond at the LHC," Joint Experimental-Theoretical Seminar (Wine-and-Cheese Seminar), Fermi National Accelerator Laboratory, Batavia, IL, April 2010.
52. "Spin determination of single-produced resonances at LHC," Joint Particle Physics Seminar, University of Maryland and Johns Hopkins University, March 2010.
51. "The Higgs Particle, or the Origin of Mass," Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July – August 2009.
50. "First Alignment of the CMS Tracker and Implications for the First Collision Data," EPSHEP09: The 2009 Europhysics Conference on High Energy Physics, Krakow, Poland, July 2009.
49. "CMS Tracker alignment strategy with cosmic muons," the 3rd LHC Detector Alignment Workshop, CERN, Geneva, Switzerland, June 2009.
48. "Measurements of CKM Angle  $\alpha$ ," ICHEP-2008, 34th International Conference on High Energy Physics, Philadelphia, PA, August 2008.
47. "What If the Particle World Were Different?" Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July – August 2008.
46. "The Uncertainty Principle, the Quarks, and the Search for New Physics," colloquium at Towson University, Towson, MD, Fall 2007.
45. "The Uncertainty Principle and the Quarks," Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July – August 2007.
44. "First CMS alignment geometry," the 2nd LHC alignment workshop in Geneva, Switzerland, June 2007.
43. "Hot Topics from  $BABAR$ ," the 5th Flavor Physics and  $CP$  Violation Conference, Bled, Slovenia, May 2007.
42. "The Uncertainty Principle, the Quarks, and the Search for New Physics," colloquium at the Johns Hopkins University, Baltimore, MD, Spring 2007.
41. "Measurement of  $\alpha$ : Taming the Mischievous Penguin," Joint Experimental-Theoretical Seminar (Wine-and-Cheese Seminar), Fermi National Accelerator Laboratory, Batavia, IL, December 2006.
40. "Measurement of  $\alpha$ : Taming the Mischievous Penguin," seminar at the Johns Hopkins University, Baltimore, MD, December 2006.
39. "Vector-Tensor and Vector-Vector  $B$  Decays at  $BABAR$ ," Joint Meeting of Japan and American Physics Societies, Division of Particles and Fields, Honolulu, Hawaii, November 2006.
38. "Matter and Anti-Matter: What is the Matter with Them?" Lectures at the QuarkNet center, Johns Hopkins University, Baltimore, MD, July – August 2006.
37. "Experience and Ideas for Silicon Detector Alignment," Pixel Detector Software Workshop, Fermi National Accelerator Laboratory, Batavia, IL, January 2006.

36. “ $B \rightarrow$  Vector-Vector Polarization and Weak Phases,” CKM Angles Workshop, SLAC National Accelerator Laboratory, Palo Alto, CA, September 2005.
35. “Measuring CKM Angle  $\alpha$  with  $B \rightarrow \rho\rho$  and  $\rho\pi$ ,” INT Workshop on Flavor Physics and QCD, University of Washington, Seattle, WA, May 2005.
34. “Physics and Simulation for  $B \rightarrow$  Vector-Vector,” Super  $B$  Factory Workshop, University of Hawaii, Honolulu, HI, April 2005.
33. “Rare Vector-Vector  $B$  Decays: a New Window on Fundamental Interactions,” seminar at the Johns Hopkins University, Baltimore, MD, March 2005.
32. “Rare Vector-Vector  $B$  Decays: a New Window on Fundamental Interactions,” seminar at the University of California at Irvine, Irvine, CA, March 2005.
31. “Rare Vector-Vector  $B$  Decays: a New Window on Fundamental Interactions,” seminar at Massachusetts Institute of Technology, Boston, MA, February 2005.
30. “Rare Vector-Vector  $B$  Decays: a New Window on Fundamental Interactions,” seminar at Cornell University, Ithaca, NY, February 2005.
29. “Rare Vector-Vector  $B$  Decays: a New Window on Fundamental Interactions,” seminar at Indiana University, Bloomington, IN, February 2005.
28. “Rare Vector-Vector  $B$  Decays: a New Window on Fundamental Interactions,” seminar at the University of Colorado at Boulder, Boulder, CO, February 2005.
27. “Rare Vector-Vector  $B$  Decays: a New Window on Fundamental Interactions,” seminar at Lawrence Berkeley National Laboratory, Berkeley, CA, January 2005.
26. “Rare Vector-Vector  $B$  Decays: a New Window on Fundamental Interactions,” seminar at Fermi National Accelerator Laboratory, Batavia, IL, January 2005.
25. “Rare Vector-Vector  $B$  Decays: a New Window on Fundamental Interactions,” seminar at the University of Washington, Seattle, WA, January 2005.
24. “Rare Vector-Vector  $B$  Decays: a New Window on Fundamental Interactions,” seminar at the University of Hawaii, Honolulu, HI, November 2004.
23. “Highlights of the *BABAR* Results at ICHEP-2004,” seminar at Budker Institute for Nuclear Physics, Novosibirsk, Russia, August 2004.
22. “Polarization Puzzle in  $B \rightarrow \varphi K^*$  and Other  $B \rightarrow VV$  at *BABAR*,” ICHEP-2004, 32th International Conference on High Energy Physics, Beijing, China, August 2004.
21. “A New Approach to Alpha and New Physics with Rare Vector-Vector  $B$  Decays,” seminar at Lawrence Berkeley National Laboratory, Berkeley, CA, April 2004.
20. “A New Approach to Alpha and New Physics with Rare Vector-Vector  $B$  Decays,” seminar at the University of California at Riverside, CA, March 2004.
19. “A New Approach to Alpha and New Physics with Rare Vector-Vector  $B$  Decays,” seminar at McGill University, Montreal, Canada, January 2004.

18. "Experimental Studies of Triple Product Correlations," CKM Angles Physics Workshop, SLAC National Accelerator Laboratory, Palo Alto, CA, October 2003.
17. "Selected Topics in Heavy Flavor Physics: Highlights of Summer 2003," Seminar at Lawrence Berkeley National Laboratory, Berkeley, CA, September 2003.
16. " $B \rightarrow$  Vector Vector Experimental Issues and Prospects," Workshop on the Discovery Potential of a  $B$  Factory at  $10^{36}$ , SLAC, Stanford, CA, May 2003.
15. "Rare Vector-Vector  $B$  decays: a Laboratory for Strong and Weak Dynamics," seminar at TRIUMF national laboratory, U. of British Columbia, April 2003;
14. "Rare Vector-Vector  $B$  decays: a Laboratory for Strong and Weak Dynamics," seminar at Lawrence Berkeley National Laboratory, Berkeley, CA, March 2003.
13. "Measurement of  $\sin(2\alpha)$  at *BABAR*," The 8th International Conference on  $B$ -physics (BEAUTY-2002), Santiago de Compostela, Spain, June 2002.
12. "Angular Analysis of Charmless  $B$  Decays to Vector-Vector," Workshop on Angular Analysis in Heavy Meson Decays, SLAC, Stanford, CA, December 2001.
11. "Summary of the Flavor Physics Group report from Snowmass," seminar at Lawrence Berkeley National Laboratory, Berkeley, CA, August 2001.
10. "New Physics with Rare  $B$  Meson Decays," Meeting on Future of the Particle Physics, Snowmass, CO, July 2001.
9. "Rare  $B$  Meson Decays with  $\eta'$  or  $\eta$  Mesons:  $\eta'K$  Puzzle," seminar at the University of Colorado, Boulder, CO, May 2000.
8. "Rare  $B$  Meson Decays with  $\eta'$  or  $\eta$  Mesons:  $\eta'K$  Puzzle," seminar at Lawrence Berkeley National Laboratory, Berkeley, CA, April 2000.
7. "Rare  $B$  Meson Decays with  $\eta'$  or  $\eta$  Mesons:  $\eta'K$  Puzzle," seminar at SLAC National Accelerator Laboratory, Palo Alto, CA, April 2000.
6. "Rare  $B$  Meson Decays with  $\eta'$  or  $\eta$  Mesons:  $\eta'K$  Puzzle," seminar at the University of California at Santa Barbara, CA, March 2000.
5. "Rare  $B$  Meson Decays with  $\eta'$  or  $\eta$  Mesons:  $\eta'K$  Puzzle," seminar at the University of California at San Diego, CA, March 2000.
4. "Charmless Hadronic  $B$  Meson Decays with CLEO," The 15th Lake Louise Winter Institute, Canada, February 2000.
3. "Two-body  $B$  Meson Decays to  $\eta$ ,  $\eta'$ ,  $\omega$  and  $\varphi$ ," American Physics Society Meeting, Columbus, OH, April 1998.
2. "The *BABAR* Prototype Calorimeter," The 34th Novosibirsk International Student Conference, Russia, April 1996.
1. "The SND Calorimeter First Level Trigger," The 34th Novosibirsk International Student Conference, Russia, April 1996.

## Popular Articles and Coverage in the Media

20. "10 Year Anniversary of the Discovery of the Higgs Boson," *Johns Hopkins Physics and Astronomy Feature Article*, July 2022, <https://physics-astronomy.jhu.edu/2022/07/04/10-year-anniversary-of-the-discovery-of-the-higgs-boson/>
19. "Scrutinizing production and decay kinematics of the Higgs boson using its golden decay channel," *CMS Physics Briefing*, August 2020, <https://cms.cern/news/scrutinizing-production-and-decay-kinematics-higgs-boson-using-its-golden-decay-channel>
18. "Bump Watch 2016," *Symmetry Magazine*, March 2016, <https://www.symmetrymagazine.org/article/bump-watch-2016>
17. "Half-life of the Higgs boson," *Fermilab Today*, May 2014, 2014, [https://www.fnal.gov/pub/today/archive/archive\\_2014/today14-05-27.html](https://www.fnal.gov/pub/today/archive/archive_2014/today14-05-27.html)
16. "Measuring the lifetime of the Higgs boson," *Symmetry Magazine*, June 2014, <https://www.symmetrymagazine.org/article/june-2014/measuring-the-lifetime-of-the-higgs-boson>
15. "Tracking Down the Centerpiece of Particle Physics," *Johns Hopkins Physics and Astronomy Feature Article*, December 2013, <http://krieger2.jhu.edu/pubs/physics/2013/features.html>
14. "What is the Higgs boson? Johns Hopkins physicist discusses Nobel-winning find," HUB news network, October 2013, <http://hub.jhu.edu/2013/10/08/higgs-boson-nobel-gritsan>
13. "New boson's mirror image looks like the Higgs," *CERN Courier*, February 2013, <http://cerncourier.com/cws/article/cern/52021>
12. "Is it the Higgs boson?" *Fermilab Today*, January 11, 2013, [http://www.fnal.gov/pub/today/archive/archive\\_2013/today13-01-11.html](http://www.fnal.gov/pub/today/archive/archive_2013/today13-01-11.html)
11. Featured article on LHC discovery, *The Magazine of the JHU Arts and Sciences*, November 2012, <http://krieger.jhu.edu/magazine/2012/11/andei-gritsan/>
10. "Gravity and the Standard Model," *Fermilab Today*, October 26, 2012, [http://www.fnal.gov/pub/today/archive/archive\\_2012/today12-10-26.html](http://www.fnal.gov/pub/today/archive/archive_2012/today12-10-26.html)
9. "Midday on Science," appearance on a radio show with Dan Rodricks, as an expert on the Higgs particle, on Public Radio at WYPR 88.1 FM, 1–2pm, January 9, 2012. <http://www.wypr.org/podcast/monday-january-9-1-2-pm-midday-science>
8. "Maryland Morning," appearance on a radio show with Sheilah Kast, as an expert on the Higgs particle, on Public Radio at WYPR 88.1 FM, 9–9:30am, December 16, 2011. <http://mdmorn.wordpress.com/2011/12/16/1216111-its-bird-its-a-plane-its-the-higgs-boson-no-wait-maybe/>
7. "Hopkins, Maryland help in worldwide hunt for elusive Higgs boson," *The Baltimore Sun*, December 14, 2011, <https://www.baltimoresun.com/business/bs-bz-higgs-boson-research-20111213-story.html>

6. "The Weak Mixing of Light and Heavy," A. Gritsan and N. Tran, *CMS Times*, November 7, 2011, <https://gritsan.pha.jhu.edu/research/CMS-Times-2011-11-01-weakmixing.pdf>
5. "Weinberg's angle," *Fermilab Today*, November 11, 2011, [http://www.fnal.gov/pub/today/archive\\_2011/today11-11-11.html](http://www.fnal.gov/pub/today/archive_2011/today11-11-11.html)
4. "Hadron collisions reach out to people in Washington," A. Gritsan, *CMS Times*, November 1, 2010, <https://gritsan.pha.jhu.edu/research/CMS-Times-2010-11-01-festival.pdf>
3. "Alignment of a Giant," A. Gritsan, *CMS Times*, March 1, 2010, <https://gritsan.pha.jhu.edu/research/CMS-Times-2010-03-01-alignment.pdf>
2. "Particles Spin Mysteriously through the *BABAR* Detector," A. Gritsan, *Science Today in SLAC Today*, October 26, 2006, <http://today.slac.stanford.edu/a/2006/10-26.htm>
1. "*BABAR* Tames the Mischievous Penguin," A. Gritsan, *Science Today in SLAC Today*, August 17, 2006, <http://today.slac.stanford.edu/a/2006/08-17.htm>

## Community Service

- Steering Group member (convener) of the LHC Effective Field Theory (EFT) Working Group, 2020-2022.
- Steering Committee member of the LHC Higgs Physics Working Group, 2019-2022.
- Coordinator of the "Snowmass-2022" high-energy physics community effort in the study of Higgs CP violation measurements, 2020-2022.
- Co-leader (convener) of the "Snowmass-2013" high-energy physics community effort in the study group of the Higgs boson at the Energy Frontier, 2012-2013.
- Coordinator of the "Snowmass-2001" high-energy physics community effort in the study group of the Flavor physics with quarks, 2001.
- International research review panels and committees:
  - US National Science Foundation (NSF), 2009-2021;
  - US Department of Energy (DOE), panel review of US operation program of LHC, 2011;
  - SRI International's Center for Science, Technology and Economic Development, 2009–2013.
- Leading public science outreach activities through exhibits at the National Science and Engineering Festivals, University Physics Fairs, and lectures at the Quarknet programs, 2006-present.