

READING MATERIAL FOR BANFF

- Louis Lyons, “Open statistical issues in particle physics”, <http://arxiv.org/abs/0811.1663> An article from Annals of Applied Statistics, aimed at Statisticians. Includes a brief introduction to Particle Physics.
- The Glossary of Particle Physics terminology is at <http://lib.stat.cmu.edu/aoas/163/supplement.pdf>
- G. Cowan, “Testing Nature to the limit: the Large Hadron Collider” <http://www.stat.sfu.ca/~lockhart/Cowan.pdf>
An introduction to Particle Physics, and a description of the statistical issues at the Large Hadron Collider, written for Statistician
- Jim Linnemann, “What does a (High Energy) Physicist mean when they say 'Monte Carlo'?” <http://user.pa.msu.edu/linnemann/public/Banff/MC%20for%20Statisticians.pdf>
Explanation of Particle Physics Monte Carlos for Statisticians
- K.J. Orford, “TOPICAL REVIEW: The analysis of cosmic ray data” <http://adsabs.harvard.edu/abs/2000JPhG...26R...1O>
Statistical problems in cosmic ray astrophysics.
- PHYSTAT-LHC Workshop, <http://phystat-lhc.web.cern.ch/phystat-lhc/>
Proceedings of a Workshop dedicated to discovery issues. Or try <http://phystat-lhc.web.cern.ch/phystat-lhc/2008-001.pdf> .
- Jim Berger, “A comparison of testing methodologies”, in PHYSTAT-LHC Workshop proceedings above.
- “Comments on ‘Look Elsewhere Effect’”, <http://www.physics.ox.ac.uk/users/lyons/LEE.ppt> or http://www.physics.ox.ac.uk/users/lyons/LEE_feb7_2010.pdf
- “Significance calculations in HEP and Gamma Ray Astronomy”
 - Long version http://arxiv.org/PS_cache/physics/pdf/0702/0702156v4.pdf
 - Short version <http://arxiv.org/abs/physics/0312059>
 - Short version compares properties of different methods of calculation significance in "on-off" problem.
- “Methods for comparing two hypotheses” https://www.physics.ox.ac.uk/users/lyons/H0H1_A~1.pdf
- CLAS on Pentaquarks:
 - http://arxiv.org/PS_cache/hep-ex/pdf/0307/0307018v4.pdf and
 - http://arxiv.org/PS_cache/arxiv/pdf/0709/0709.3154v2.pdf
- History of the retracted discovery of pentaquarks
 - http://pdg.lbl.gov/2006/reviews/theta_b152.pdf

- Bob Cousins:
 - http://arxiv.org/PS_cache/arxiv/pdf/0807/0807.1330v2.pdf
 - CLAS on pentaquarks, with frequentist 5 sigma discovery of peak, and Bayesian mild favouring of no peak, from same data; plus comments by Bob Cousins.
- Bob Cousins: “Statistical methods in HEP”
http://www-theorie.physik.unizh.ch/cosmostats/talks/cousins_cosmostats_2009.pdf
 Introductory lecture by Bob Cousins at Cosmostats 2009. Transparencies, but contains lots of words.
- Brad Efron
 - “The Future of Indirect Evidence”,
<http://stat.stanford.edu/~ckirby/brad/papers/2009Future.pdf> and/or
 - “Doing Thousands of Hypothesis Tests at the Same time”
 - <http://stat.stanford.edu/~ckirby/brad/papers/2007DoingThousands.pdf>
- On upper limits/bounds
 - J. Heinrich, “Review of Banff Challenge on Upper Limits”, in PHYSTAT-LHC proceedings cited above.
 - “V. L. Kashyap et al., "On computing Upper Limits to Source Intensities", item 3 on David van Dyk's web-site
<http://www.ics.uci.edu/~dvd/publications-journal.html>

Material from the 2006 Workshop at Banff

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and go to background material for more.