

**Title:** Introduction to Statistics

**Lecturer:** Dr Glen Cowan

**Date and Times:**

- 3<sup>rd</sup> August at 9:15
- 4<sup>th</sup> August at 9:15
- 5<sup>th</sup> August at 9:15
- 6<sup>th</sup> August at 9:15

**Summary of the proposed talk:**

The four lectures will present an introduction to statistical methods as used in High Energy Physics. As the time will be very limited, the course will seek mainly to define the important issues and to introduce the most wide used tools. Topics will include the interpretation and use of probability, estimation of parameters and testing of hypotheses.

**Prerequisite knowledge and references:**

Prerequisite knowledge is standard university level mathematics.

**Biography-**

**Brief CV:**

1981 -- B.S. in Physics from University of California, Los Angeles

1988 -- Ph.D in Physics from University of California, Berkeley

1988–1998 -- Research on electron-positron annihilation with the ALEPH Collaboration (properties of hadronic Z decays, QCD) with MPI Munich and University of Siegen.

1998-present -- Reader in Particle Physics at Royal Holloway, University of London. Research with the BaBar and ATLAS experiments.

**Publications-talks**

Recent statistics talks:

- [Multivariate statistical methods in HEP](#), CERN Academic Training Lecture Series, 16-19 June, 2008.
- [Statistical Methods in HEP: nuisance parameters and systematic errors](#), RHUL Particle Physics Group seminar, 22 March, 2006.
- [Bayesian statistical methods for parton analyses](#), talk at DIS2006, Tsukuba, 22 April, 2006.
- [The small-n problem in High Energy Physics](#), talk at Statistical Challenges in Modern Astronomy IV, Penn State Center for Astrostatistics, 12-15 June, 2006.
- My [talk on Bayesian statistics](#) at the Rencontres de Moriond (QCD), La Thuile, 18 March, 2007.
- Lectures on Statistics at the CERN-FNAL Hadron Collider Physics School: [lecture 1](#) and [lecture 2](#), CERN, 6 and 8 June, 2007.

Some books:

G. Cowan, *Statistical Data Analysis*, Clarendon Press, Oxford, 1998.

R.J.Barlow, *A Guide to the Use of Statistical Methods in the Physical Sciences*, John Wiley, 1989;

F. James, *Statistical Methods in Experimental Physics*, 2nd ed., World Scientific, 2006;

W.T.Eadie et al., *North-Holland*, 1971;

S.Brandt, *Statistical and Computational Methods in Data Analysis*, Springer, New York, 1998;

L.Lyons, *Statistics for Nuclear and Particle Physics*, CUP, 1986.