Contribution ID: **70** Type: **Talk**

Bayesian Analysis of Photoproduction Reactions

Monday 25 September 2017 17:50 (20 minutes)

We lay out a framework that can be used to obtain estimates of the possible impact of (combinations) of polarization measurements in pseudoscalar-meson photoproduction from the nucleon. To this end, we quantify the distance between models for pseudoscalar-meson photoproduction in amplitude space. Experimental observables, with finite accuracy, map to probability distributions in amplitude space, and the characteristic width scale of such distributions needs to be smaller than the distance between models if the observable data are going to be useful. We therefore also introduce a method for evaluating probability distributions in amplitude space that arise as a result of one or more measurements, and show how one can use this to determine what further polarization measurements are going to be necessary to be able to discriminate among models.

Additionally, we illustrate how a Bayesian analysis can shed light onto the resonance content of, amongst others, pseudoscalar meson photoproduction reactions. Hereby, not only the point estimate from a best chi-square analysis is relevant, but rather the weight of the parameter space which is compatible with a given measurement must be taken into account. We illustrate how, in this context, a chi-square analysis compares to a Bayesian analysis which includes the full parameter space.

Author: NYS, Jannes (Ghent University)

Co-authors: RYCKEBUSCH, Jan (G); Prof. IRELAND, David (University of Glasgow); GLAZIER, Derek (University of Edinburgh)

Presenter: NYS, Jannes (Ghent University)

Session Classification: Analysis tools

Track Classification: Analysis tools