

The GlueX Physics Book Outline

Abstract

This is a proposed outline, or a table of contents, for the planned *GlueX Physics Book*. This book is meant to be a document that will focus on the broad physics issues of the GlueX project and how these fit into the larger picture of subatomic physics and more particularly Quantum Chromodynamics and an understanding of the nature of confinement. It will include a discussion of the spectroscopy of $q\bar{q}$ mesons and gluonic excitations within lattice QCD and QCD-inspired models. The book will review the arguments for why photon probes should be particularly effective in uncovering the spectrum of gluonic excitations that carry exotic quantum numbers. It will also describe the partial wave analysis technique and its phenomenological underpinnings in applying the technique to meson photoproduction. The current status of meson photoproduction will also be reviewed.

To make the document self-contained, a discussion of the kinematics relevant to GlueX and the response of the detector to several key processes will be included in the appendices.

This document will also result in the compilation of relevant literature.

Each major section will be the responsibility of one or two conveners who will flesh out the outline for their sections prior to a meeting in summer 2006 devoted to a discussion of GlueX physics.

SLAC-R-504

The BaBar Physics Book

[www.slac.stanford.edu/
pubs/slacreports/slac-r-504.html](http://www.slac.stanford.edu/pubs/slacreports/slac-r-504.html)

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