

BESIII Collaboration Data Management Plan

Introduction

The BESIII collaboration carries out experimental investigations of elementary particles and their interactions in electron-positron annihilations in the center-of-mass energy range 2.0-4.6 GeV. Data are collected with the BESIII detector, which is installed in the interaction region of the BEPCII accelerator at the Institute of High Energy Physics (IHEP) in Beijing, China. IHEP, which is an institute of the Chinese Academy of Sciences, fully supports the operation of the accelerator and the detector. Approximately 450 physicists representing 58 institutions in eleven nations in Asia, Europe and North America comprise the BESIII collaboration. The data produced by BESIII are a unique resource for the worldwide HEP community, providing precisely reconstructed samples of elementary particles of great current interest, including hadronic states composed of charm quarks. This document describes the BESIII collaboration policy for the management, preservation and sharing of BESIII data.

Data Types and Sources

BESIII data at the most fundamental level consist of binary files read out from detector components or produced by simulations of the response of those components to specific processes. Detailed calibration, background simulation and reconstruction are required to produce physics objects like charged particle tracks and neutral showers, the properties of which are used for the detailed measurements that are reported to the scientific community through conference presentations, preprint services and papers in peer-reviewed journals.

Content and Format

The format of BESIII event data is based on standards of the HEP field (e.g., ROOT, GAUDI). Detailed analysis is carried out with proprietary BESIII computer codes for reconstruction, detector calibration, efficiency determination, and background estimation, all of which are essential to make measurements that are precise, reproducible and have well understood uncertainties. Data are stored for collaboration access and archived on magnetic disk and tape storage systems installed at IHEP. Subsamples are also stored and analyzed on computing facilities at collaborators' universities and laboratories. Analysis is carried out through local and remote connections to systems at IHEP, on collaborators' systems at their remote sites, and through the coordinated use of distributed computers linked by the BESIII Grid infrastructure.

The BESIII collaboration and IHEP commit to the preservation of the full reconstructed data sample, essential simulated samples and the code necessary for their analysis for the duration of the experiment and for a period beyond the completion of data taking that will be determined through negotiation between the BESIII collaboration and IHEP. This time period will take into account the data management policies of the funding agencies

that have contributed to the experiment and the expectations and needs of the international HEP community.

The management of BESIII and IHEP further commit to notify member institutions through their Institutional Board representatives of the schedule for discontinuing support of specific data samples. Collaborators will be given the opportunity to copy and archive data and analysis code at their home institutions for preservation beyond the end date for IHEP support.

Sharing and Preservation

BESIII acquired its first e^+e^- annihilation data in 2009 and has collected a great variety of samples in annual data runs since then. IHEP has preserved all raw e^+e^- annihilation data and the simulated samples necessary for replication and verification of published results. Two copies of the data tapes are being stored in two different locations on the IHEP campus. The storage locations are secure and the data tapes are tested periodically to verify their integrity and usability.

The BESIII collaboration recognizes that the data have information content beyond what can be presented in journal papers, and that the detail and format in publications may not be adequate for all post-publication interpretation by experimental and theoretical physicists who are not BESIII members. The collaboration commits to make its best effort to provide high-level digital data underlying plots and tables in published papers, either fully corrected or accompanied by necessary efficiency and background distributions, along with any error information necessary for interpretation. When such interest is foreseen, this additional information will be made available through journal supplemental material postings, arXiv ancillary files, the HEPData repository maintained by the Durham University IPPP, or other appropriate channels. Interested physicists needing access to information that has not been made available are invited to contact the BESIII corresponding authors or collaboration management with specific requests, and the collaboration will provide information to the maximum extent appropriate and practical.

Protection

BESIII data do not contain any personal identification or other confidential information, and therefore do not require special security measures to protect confidentiality.

Rationale

This first edition of the BESIII data management plan has been modeled after similar policies that have been adopted by other international HEP collaborations. It conforms to the current practices and expectations of the international HEP community, and is consistent with guidelines provided by the United States Department of Energy Office of Science. Future revisions will be made to accommodate specific policies governing the research activities of all collaboration members.