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BaBar computing - From collisions to physics results

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The BaBar experiment at SLAC studies B-physics at the Upsilon(4S) resonance using the high-luminosity e^+e^- collider PEP-II at the Stanford Linear Accelerator Center (SLAC). Taking, processing and analyzing the very large data samples is a significant computing challenge.

This presentation will describe the entire BaBar computing chain and illustrate the solutions chosen as well as their evolution with the ever higher luminosity being delivered by PEP-II. This will include data acquisition and software triggering in a high availability, low-deadtime online environment, a prompt, automated calibration pass through the data SLAC and then the full reconstruction of the data that takes place at INFN-Padova within 24 hours. Monte Carlo production takes place in a highly automated fashion in 25+ sites. The resulting real and simulated data is distributed and made available at SLAC and other computing centers.

For analysis a much more sophisticated skimming pass has been introduced in the past year, along with a reworked eventstore. This allows 120 highly customized analysis-specific skims to be produced for direct use by the analysis groups. This skim data format is the same eventstore data as that produced directly by the data and monte carlo productions and can be handled and distributed in the same way.

The total data volume in BaBar is about 1.5PB.

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