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Modeling, Growth, and Characterization of Advanced Photocathode Materials at Northern Illinois University

Monday, 22 July 2024 16:00 (24 minutes)

An electron source is a crucial component of any accelerator facility, as it defines the scientific reach and capabilities of accelerator applications. Therefore, detailed modeling of electron emission along with advanced growth and characterization of cathode materials are required to enhance emission capabilities of cathodes. This presentation will review the practices being developed at Northern Illinois University (NIU) towards improving quality of conventional photocathodes and exploring novel electron sources that can outperform those currently used at leading accelerator facilities. Specifically, we will discuss Monte Carlo modeling of spin-polarized photoemission from GaAs photocathodes and potential novel spin-polarized electron sources. Additionally, we will review the main mechanisms limiting beam brightness and the requirements for developing high-quality alkali antimonide photocathodes.

Working group

WG5 : Beam sources, monitoring and control

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