

The Jefferson Lab Positron Physics Program

Thursday, 19 October 2023 12:00 (30 minutes)

The perspective of high duty-cycle and high intensity polarized and unpolarized positron beams, in complement to the existing CEBAF (Continuous Electron Beam Accelerator Facility) 12 GeV electron beams, has been nurtured since the very first 6 GeV upgrade of the CEBAF accelerator. Along the years, experimental results about the electromagnetic form factors and the generalized parton distributions of the nucleon pointed towards the importance of positron beams for the experimental determination of these fundamental quantities of the nucleon structure. Further ideas emerged about testing the predictions of the standard model, exploring the dark matter sector, or investigating electroweak processes. A long term and comprehensive research effort has developed both in the physics [1] and the technics [2] areas to assess the potential of an experimental program and to address the technological issues of high duty cycle positron beams. The Jefferson Lab Program Advisory Committee recognized the high scientific value of such a program. The development of positron beam capabilities at Jefferson Lab (JLab) is now identified as the first step of the future CEBAF upgrade.

This presentation will review the current status of the JLab positron beam and physics programs.

[1] (JLab Positron Working Group) A. Accardi et al. Eur. Phys. J. A 57 (2021) 261.

[2] (Ce+BAF Working Group) J. Grames et al. JACoW IPAC (2023)

Parallel Session

Invited Plenary Talk

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Session Classification: Plenary talk