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Polarized 3He Target at JLab

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Polarized 3He gas targets have been used successfully at Jefferson Lab (JLab) for a number of electron scattering experiments to study 3He spin physics and more importantly, as an effective polarized neutron target, to study the neutron spin physics, including longitudinal and transverse spin structure and 3-d structure. The performance of the JLab target reached the highest polarized luminosity and highest figure of-merit (FOM) for high-energy nuclear experiments using a polarized-target. It has gone through continuous improvements over the decade and has been providing a powerful tool for precision study of the neutron and 3He spin physics. The achievements and progresses of the JLab polarized 3He target system will be reviewed in this talk. Several high-impact experiments are planned for the near- and long-term future at JLab using the polarized 3He target. An upgrade to meet the even-more demanding high precision experimental requirements is under way. It consists two stages, each stage aims to improve the FOM by about a factor of 3. Details of the upgrade plan and progress will also be discussed.

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