

Abstract Submitted
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Extracting information on shard penetration from plasma discharge videos: a new OpenCV based bright object tracker CRISTIAN SOMMARIVA, EPFL-SPC, CH, SCOTT SILBURN, EUROfusion Consortium, UK, JONATHAN GRAVES, EPFL-SPC, CH, CEDRIC REUX, CEA-IRFM, FR, JOAN DECKER, EPFL-SPC, CH, JET CONTRIBUTORS, EUROfusion Consortium, UK — Disruptions are magnetohydrodynamic instabilities characterized by a sudden loss of plasma confinement and can create dangerous levels of heat loads, electromechanical stresses and runaway electron currents. Therefore, an effective disruption mitigation scheme is required for safe tokamak operations. The Shattered Pellet Injector is the chosen mitigation system for ITER and prototypes have been used in DIII-D while tests in JET will be conducted in the forthcoming months. Their effectiveness depends on the shard penetration length into the plasma, which, in JET, can be measured by analyzing the data taken from fast visible camera looking at the SPI injection point. For doing so, a new particle tracker has been developed for identifying and tracking bright objects visible in plasma discharge videos. In the JET video particle tracker, this is obtained using general-purpose open-source and commercial computer vision technologies. Tracking robustness is improved by blending different methods via a weighting scheme. After an introduction of the new tool, this work reports code performance, and recent tests conducted on videos showing fueling and ELM pacing pellets injected into JET plasmas. If data on JET mitigated disruption via SPI are available, first results will be reported.

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