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Error Analysis on Filament Data from Stereoscopic Fast Cameras on MAST[1] RYAN CHABAN, College of William Mary, TOM FARLEY, Culham Centre for Fusion Energy, SASKIA MORDIJCK, College of William Mary, NICK WALKDEN, FULVIO MILITELLO, JAMES HARRISON, ANDREW KIRK, Culham Centre for Fusion Energy — Fast camera images are tomographically inverted using a magnetic field line based technique to generate data on filamentary structures as they interchange across the separatrix and propagate through the SOL. This technique has been employed and developed on MAST over many years for a one camera setup. In 2009 MAST ran a campaign in which two stereoscopic fast cameras were mounted on the vessel collecting images. We use this data to quantify the error by comparing the data and analysis across the cameras and by combining the information between the two cameras. Our procedure concerns two analysis checkpoints for quantifying error: direct image comparison after the inversion process, and statistical comparison of recognized filaments after applying the blob finder to the inversions both separately and combined. Using the difference between images as an error metric, our optimization shows a consistent shift between the cameras implying an uncertainty in a single camera of +/- 0.5cm radially and +/- 5 cm toroidally reducing the error on average 15%. The statistical tests conducted on recognized filaments show that similar blobs in both camera frames score better on the Kolmogorov-Smirnov test comparing them to distributions dictated by the assumptions of theory.

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