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**Axisymmetric Global Alfven Eigenmodes (GAEs) within the ellipticity-induced frequency gap in the Joint European Torus** JAMES OLIVER, University of Texas at Austin, SERGEI SHARAPOV, Culham Centre for Fusion Energy, BORIS BREIZMAN, LINJIN ZHENG, University of Texas at Austin, JET TEAM — Alfven eigenmodes with toroidal mode number $n = 0$ (i.e. axisymmetric) have been observed in the ellipticity-induced frequency range in JET. The $n = 0$ modes are of interest because they may be used to diagnose fast particle energy distributions at the mode location. The modes were identified as Global Alfven Eigenmodes (GAEs), with the ellipticity of the plasma cross-section preventing strong continuum damping of the modes. The MHD codes CSCAS, MISHKA and AEGIS were used to compute the $n = 0$ Alfven continuum, eigenmode structure and continuum damping. Finite ellipticity splits the Alfven continuum branch into two branches, producing a frequency gap, and splits the single GAE into two modes. One mode has dominant poloidal harmonics $m = \pm 1$ with the same polarity and exists below the minimum of the top branch. The frequency of this mode coincides with the experimentally observed frequency. The other mode is found below the lower branch with opposite polarity of the poloidal harmonics, and is not observed experimentally. Analytical theory for the $n = 0$ continuum and GAE mode structure in an elliptical cylinder agree with the numerical modelling. Mode drive and damping calculations will also be presented.

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