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**Comparison of Density Peaking in JET and DIII-D Plasmas: Gyrokinetic and Gyrofluid Modelling**[1] E. FRANSSON, F. ERIKSSON, M. HELD, Chalmers University of Technology, S. MORDIJCK, College of William & Mary, A. SALMI, VTT, P. STRAND, Chalmers University of Technology, T. TALA, VTT, JET CONTRIBUTORS COLLABORATION[2] — Density and density peaking are crucial for the efficiency of future fusion power plants. The density peaking and the turbulent transport are modelled with GENE and TGLF for two collisionality scaling experiments at JET and DIII-D. Experimental data from these machines show a dissimilar dependence in the density peaking from the source and turbulent transport: for JET the source is dominant while the turbulent transport is dominant for DIII-D. This is studied by investigating the zero flux density gradient (peaking factor) and by calculating the particle balance diffusion and pinch. Simulations showed that the largest change in the density peaking came from the difference in the normalized temperature gradients. The perturbed diffusion and pinch were also simulated with TGLF and showed a good match with the experimentally measured values. The calculated ratio of the particle balance pinch and diffusion explained the difference in peaking from turbulent transport, a high ratio in DIII-D yielding high peaking and a low ratio for JET yielding low peaking. However, the particle balance diffusion, which suppresses the peaking from the source, was high for DIII-D and low for JET. Thus, explaining that the particle source has a larger impact for the peaking at JET.

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