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M3D-K Simulation of Beam-Driven Alfven Modes in DIII-D[1] J. LANG, G.-Y. FU, Y. CHEN, J. BRESLAU, J. CHEN, G. KRAMER, M. VAN ZEELAND — M3D-K hybrid simulations [1] are carried to study the beam-driven AEs and compare with the experimental results observed in the DIII-D [2]. We have carried out code benchmark studies for the DIII-D discharge shot #142111. In ideal MHD limit, the M3D-K results agree with that of NOVA in terms of mode structure and mode frequency. However, with energetic beam ions (using the beam pressure profile from TRANSP), RSAEs are not excited in the M3D-K simulations for the DIII-D discharge. The excited mode frequency is not sensitive to q_{min} and the calculated mode structure is also different from the RSAEs obtained in MHD limit of M3D-K simulations. The mode peak is shifted outward with a larger width as compared to that of the RSAE's. Variation in beam profile has little effect on the mode frequency or mode structure. The initial nonlinear simulation showed that the mode structure and mode frequency both change during saturation. Detailed code benchmark with the gyrokinetic electromagnetic code GEM [3] and further comparisons with experiments will be carried out. [1] G.-Y. Fu et al., Phys. Plasmas **13**, 052517 (2006); [2] B. J. Tobias *et al.*, Phys. Rev. Lett. **106**, 075003 (2011); [3] Y. Chen and S. E. Parker, J. Comput. Phys. **220**, 839 (2007).

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