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Simulation Study of Energetic Particle Driven Geodesic Acoustic Mode in LHD Plasma HAO WANG, The Graduate University for Advanced Studies, YASUSHI TODO, The Graduate University for Advanced Studies; National Institute for Fusion Science — The energetic particle driven geodesic acoustic modes (GAMs) in LHD plasma were simulated using a hybrid simulation code for magneto-hydrodynamics (MHD) and energetic particles. The energetic particle distribution employed in the simulation is anisotropic in velocity space. The GAM frequencies in the simulation results are 38kHz for 5.0keV electron temperature and 20kHz for 1.3keV electron temperature. The frequencies agree reasonably with both the experimental observation and the prediction from MHD theory. The poloidal velocity v_θ with mode number m=0 and perturbed pressure $\tilde{\mathrm{P}}$ and density $\tilde{\mathrm{n}}$ with mode number m=1 are observed. The GAM is excited around the normalized minor radius 0.2, and it propagates in radial direction. In addition, the spatial profiles of $\tilde{\mathrm{P}}$ and $\tilde{\mathrm{n}}$ rotate in poloidal direction. After the saturation of the instability, redistribution of energetic particles takes place in pitch-angle space both for the lower pitch-angle part and for the higher pitch-angel part.

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