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CLUSTER observation of lower-hybrid drift waves at the magnetopause in magnetic field fluctuations

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The magnetopause is the outer border of the magnetosphere. It is responsible for mass and energy transfer of the shocked solar wind into the magnetosphere. The transfer mechanisms depend on the magnetopause thickness. The sharp density and magnetic field gradients at thin magnetopause (with the thickness of the order of the proton gyro-radius) may initiate and saturate lower-hybrid drift (LHD) instability. LHD waves were indeed observed by CLUSTER spacecraft at the magnetospheric side of the magnetopause in electric field fluctuations. We report about CLUSTER observation of LHD waves in magnetic field fluctuations. Further, their influence on an anomalous diffusion rate due to nonlinear wave-particle interaction is discussed.