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**A feasibility study for the existence of precursor phenomena in magnetohydrodynamic waves** HOGUN JHANG, National Fusion Research Center — The existence of precursor or forerunner waves, which propagate faster than the main signal, is a feature of linear wave propagation in a dispersive medium. Precursors were first predicted by Sommerfeld and Brillouin, and have been observed in the electromagnetic and the fluid surface wave propagation, in which non-monotonic dispersion relations prevail. In the present work, a feasibility study is carried out whether such a precursor wave exists in magnetized plasmas in the excitation and propagation of Alfvén waves. The condition for the existence of the precursors is deduced from the dispersion relations of Alfvén waves, and the characteristics of the precursors are investigated. Possible application of the present study to astrophysical and laboratory fusion plasmas are also discussed. Finally, an experimental setup is proposed for the observation of the Alfvén precursor waves.

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