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**Dynamic manipulation of electromagnetic waves in magnetized plasmas: deceleration, compression and acceleration** YOAV AVITZOUR, The University of Texas at Austin, GENNADY SHVETS, Department of Physics, The University of Texas at Austin — We study the properties of electromagnetic fields propagating in magnetized plasmas with emphasis on propagation modes with very low group velocities. The dramatic slowdown of a wave entering such a plasma results in compression of the wave energy. In plasma, unlike in other media that demonstrate low group velocity, the compressed energy is stored in the longitudinal component of the EM field and is not transferred to the medium. The compressed wave can then be used for electron acceleration in the plasma. We also demonstrate temporal compression of the transmitted wave by rotating the magnetic field or increasing its amplitude while the wave is in the plasma. Depending on the plasma frequency, the transmitted signal can be upshifted or unchanged in frequency. We present analytical and numerical results for the problem in one, two and three dimensions.

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