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Rydberg EIT in High Magnetic Field LU MA, Univ of Michigan - Ann Arbor, DAVID ANDERSON, Rydberg Technologies LLC, STEPHANIE MILLER, GEORG RAITHEL, Univ of Michigan - Ann Arbor — We present progress towards an all-optical approach for measurements of strong magnetic fields using electromagnetically induced transparency (EIT) with Rydberg atoms in an atomic vapor. Rydberg EIT spectroscopy is a promising technique for the development of atom-based, calibration- and drift-free technology for high magnetic field sensing. In this effort, Rydberg EIT is employed to spectroscopically investigate the response of Rydberg atoms exposed to strong magnetic fields, in which Rydberg atoms are in the strong-field regime. In our setup, two neodymium block magnets are used to generate fields of about 0.8 Tesla, which strongly perturb the atoms. Information on the field strength and direction is obtained by a comparison of experimental spectra with calculated spectral maps. Investigations of magnetic-field inhomogeneities and other decoherence sources will be discussed.

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