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A model of electromagnetically induced transparency and high energy charged particles in atomic media ANEESH RAMASWAMY, SVETLANA MALINOVSKAYA, Stevens Inst of Tech, IRINA NOVIKOVA, College of William and Mary — We investigate the interaction of charged HEPs with 3-level lambda systems under the EIT regime. HEP particles emit Cherenkov radiation with a phase and group cone that strongly depend on coherence between the ground and excited states. We use the Lindblad master equation to determine a set of analytic equations that model the coherence terms and show the dependence of electric susceptibility on field and system parameters. The effects of smaller FWHM in the coherence term will translate to a lower group velocity of Cherenkov radiation near the resonant frequency which can be used to provide an effective control scheme for detecting HEPs.

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