Abstract Submitted for the SES16 Meeting of The American Physical Society

Reduction of four-wave mixing using Raman Absorption in Rubidium Vapor NIKUNJKUMAR PRAJAPATI, Grad Student at The College of William and Mary, IRINA NOVIKOVA, Professor at The College of William and Mary — Electromagnetically induced transparency (EIT) is a two-photon resonance, occurring during the interaction of two optical fields – strong control and weak probe – with resonant atomic levels in a Lambda configuration. A pivotal tool for next generation information technology, it allows for lossless propagation and group velocity manipulation of light. However, in an optically dense atomic vapor, EIT is accompanied by a four-wave mixing (FWM) that results in a generation of a third (Stokes) field and amplification of the probe. This in turn diminishes the fidelity of EIT-based quantum memory. In this presentation we will discuss the possibility to reduce the negative effects of FWM by absorption of the generated Stokes field using additional Raman absorption. We will report on the preliminary results.

> Nikunjkumar Prajapati Researcher at The College of William and Mary

Date submitted: 06 Oct 2016

Electronic form version 1.4