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**Optimal control of light pulse storage and retrieval** IRINA NOVIKOVA, NATHANIEL PHILLIPS, College of William & Mary, ALEXEY GORSHKOV, Harvard University — We experimentally study the efficiency of light storage and retrieval based on the dynamic form of the electromagnetically induced transparency (EIT) in warm Rb vapor. We demonstrate the possibility to achieve the maximum storage efficiency for finite optical depth using both iteration procedure, based on time reversal for the optimization of the input signal pulse-shape, as well as the storage of arbitrary signal pulse-shape using calculated control field. We also discuss the mechanisms that hinder observation of maximum storage efficiency at higher optical depth.

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