

Multi mode nano scale Raman echo quantum memory

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Low loss magnetic surface plasmon polariton (SPP) modes characterized by enhanced electrical field component and subwavelength confinement on the dielectric and negative-index metamaterial interface are presented. We demonstrate a possibility of storage and perfect retrieval of the low loss magnetic SPP fields by using a photon echo quantum memory on Raman atomic transition. We describe specific properties of the proposed technique which opens a possibility for efficient nano scale multi-mode quantum memory.

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