

Abstract Submitted
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A BEC as a quantum memory for the polarisation of light
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Hans-Kopfermann-Straße 1, 85748 Garching, Germany — The polarisation of light
is a much-used workhorse in quantum cryptography and quantum-information ap-
plications. We experimentally realise a quantum memory for arbitrary polarisation
states of a light pulse, using an atomic multilevel scheme and electromagnetically
induced transparency (EIT) in a Bose-Einstein condensate (BEC). In the experi-
ment, the energy of the retrieved light pulse reaches values as high as 50% of the
incoming light pulse. Furthermore, the observed fidelity of the polarisation state
after the readout reaches values up to 99%.

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