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## **[512] Sub-second optical storage using dynamical decoupling in an atomic frequency comb memory**

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Quantum memories are key devices for future quantum networks. The atomic frequency comb (AFC) scheme in rare-earth doped crystals provides solid-state memories with many appealing features, such as high efficiency, multimode capacity and long storage times. The previous record storage time achieved in an AFC memory was around 1 ms, in a Europium-doped  $\text{Y}_2\text{SiO}_5$  crystal at zero applied magnetic field. Even longer storage should be possible by dynamical decoupling (DD) of the spin states, but efficient DD was so far unsuccessful at zero field due to the double degenerate nuclear states. In our newest work we demonstrate storage of optical pulses for up to half a second using the AFC scheme and DD in a  $\text{Eu}:\text{Y}_2\text{SiO}_5$  crystal under magnetic field.

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