

Abstract Submitted  
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**Single Atoms in Nearly Concentric Cavity**<sup>1</sup> ADRIAN NUGRAHA UTAMA, CHI HUAN NGUYEN, NICK LEWTY, CHRISTIAN KURTSIEFER, Centre for Quantum Technologies, QUANTUM OPTICS GROUP TEAM<sup>2</sup> — Strong interaction between photons and neutral single atoms are usually observed in cavity quantum electrodynamics (CQED) systems with high finesse mirrors and small physical volume. We demonstrate another approach that employs a near concentric cavity with relatively low finesse mirrors ( $\sim 100$ ) and large physical separation between mirrors ( $\sim 10$  mm). The transmission spectrum of our CQED system with trapped single atoms is observed to exhibit two resolved normal mode peaks, in which the single atom cooperativity is estimated to be around 0.4. The cooperativity of the system can be improved further by increasing the finesse of the mirrors or moving the cavity closer to the concentric point. The successful realization of concentric CQED systems will open opportunities for scaling up with applications in quantum computing.

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<sup>2</sup><http://www.qolah.org/>

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