

Abstract Submitted  
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**State readout by coherent motion with few-photon seeding**  
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Evanston, IL 60208 — The motion of a single trapped ion resonantly driven by  
pulsed radiation pressure is studied. We demonstrated that the driven ion quickly  
builds up coherent oscillations above the thermal motion, after scattering of order  
only one hundred photons. The motion is analyzed by Doppler velocimetry with  
subsequent motional amplification. Since the radiation pressure is state-dependent,  
this motional seeding technique provides a simple method to read out spectroscopy  
results from a single non-fluorescing ion with a partially closed cycling transition.

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