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Atom interferometer inertial sensor with radially expanding atom ensemble STEFAN RIEDL, GREG HOTH, ELIZABETH DONLEY, JOHN KITCHING, NIST, 325 Broadway, 80305 Boulder, CO — We present our work towards a novel compact atom interferometer inertial sensor based on a single radially expanding ensemble of laser-cooled atoms interrogated by pulsed stimulated Raman transitions. The sensor design emphasizes small size and simplicity of operation, while potentially achieving a performance level suitable for inertial navigation. The expansion of the atom ensemble together with spatially-resolved detection enables to separate acceleration-induced phase shifts from rotation-induced phase shifts, allowing acceleration and rotation to be independently measured.

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