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Progress Toward a Cold Ion Interferometer JAMES ARCHIBALD, ERICKSON CHRISTOPHER, JAROM JACKSON, DALLIN DURFEE, Brigham Young University — We describe progress on a cold ion matter-wave interferometer. The ions are generated by laser-cooling strontium and then photo-ionizing the atoms with a two-photon transition to an auto- ionizing state in the continuum. Each ion's quantum wave will be split and recombined using stimulated Raman transitions between the hyperfine ground states of Sr^{87+}. The interferometer phase will be determined by measuring the fraction of ions exiting in each hyperfine state. We will discuss the theory of operation, experimental methods, and potential applications of the device.

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