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A thermal beam calcium matter-wave interferometer JEREMIAH BIRRELL, DAN CHRISTENSEN, CHRISTOPHER ERICKSON, JUSTIN PAUL, REBECCA TANG, DALLIN DURFEE, Brigham Young University — We report on progress toward a calcium-beam atom interferometer. The design uses a novel alignment scheme using precision prisms which will cause first-order Doppler shifts to cancel out to high accuracy. The device will utilize a thermal beam of atoms for simplicity and high signals. The atom waves will be split and recombined using a single-photon transition at a wavelength of 657 nm. We are currently working to improve the linewidth of the 657 nm laser and constructing a 423 nm blue laser to transversely cool the atoms and to detect the output of the interferometer. We are also characterizing a thermal Ca beam using laser absorption and working on precise control of the temperature and flux of the beam.

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