

Abstract Submitted  
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**Results from the Cold Atom Laboratory's ground test bed<sup>1</sup>**

ETHAN ELLIOTT, Jet Propulsion Laboratory, CAL TEAM — We describe validation and development of critical technologies in the Cold Atom Laboratory's (CAL) ground test bed, including the demonstration of the first microwave evaporation and generation of dual-species quantum gas mixtures on an atom chip. CAL is a multi-user facility developed by NASA's Jet Propulsion Laboratory (JPL) to provide the first persistent quantum gas platform in the microgravity environment of space. The CAL instrument will be operated aboard the International Space Station (ISS) and utilize a compact atom chip trap loaded from a dual-species magneto optical trap of rubidium and potassium. In the unique environment of microgravity, the confining potentials necessary to the process of cooling atoms can be arbitrarily relaxed, enabling production of gases down to pikoKelvin temperatures and ultra-low densities. Complete removal of the confining potential allows for ultracold clouds that can float virtually fixed relative to the CAL apparatus. This new parameter regime enables ultracold atom research with broad applications in fundamental physics and inertial sensing.

<sup>1</sup>Results from the Cold Atom Laboratory's ground testbed

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