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BECCAL (Bose Einstein Condensate and Cold Atom Laboratory)

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BECCAL (Bose Einstein Condensate and Cold Atom Laboratory) is a joint mission between NASA and DLR. The payload will be installed to the international space station (ISS) to enable research on cold and condensed atoms in the unique microgravity environment. Consequently, BECCAL is not dedicated to a single experiment, but planned as a multi-purpose, multi-user facility.

To create a design baseline, six main areas of research for BECCAL were defined by the science definition team:

- Atom Interferometry
- Coherent Atom Optics
- Scalar Bose Einstein Condensates
- Spinor Bose Einstein Condensates and Quantum Gas Mixtures
- Strongly Interacting Gases and Molecules
- Quantum Information

With those areas as a baseline, BECCAL offers researchers several possibilities to work with cold and condensed atoms using magnetic and optical fields. BECCAL operates with Rubidium and Potassium, also enabling the study of mixtures.

BECCAL is currently in the design phase, which will be completed by the end of this year with the critical design review. It is destined for a minimum of 1500 hrs of experimental operations over a time of three years after launch.

In my talk, I will give an overview over the payload and the possibilities offered by the mission.

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