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**Search for Violations of Bose-Einstein Statistics Using Ultra-Cold Sr Atoms** JENNIE GUZMAN, TAICHI INAKI, ALEXANDER PENAFLO, California State University East Bay — We are beginning an experiment to search for violations of the spin-statistics theorem (SST) for photons. Using ultracold strontium atoms, we will set constraints on the SST-forbidden two-photon transition between states with angular momentum  $J=0$  and  $J'=1$ . In order to stimulate a transition between these two states, the pair of photons would need to possess total angular momentum  $J=1$ , which is an exchange-antisymmetric state forbidden by the SST. This new experimental search is motivated by enhancements to the sensitivity of possible SST violations that come from using laser-cooled strontium. These enhancements will enable an improvement in sensitivity by a few orders of magnitude compared to previous searches.

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