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**Repulsive van der Waals interactions** JIANING HAN, University of South Alabama — In this presentation, repulsive van der Waals interactions within ultracold gasses will be presented. Van der Waals interaction is generally used in physics, chemistry, biology, and other fields of science. A common misconception about van der Waals interaction is that the van der Waals interaction is attractive. This is only true for ground state atoms. For excited atoms, van der Waals interactions can be either attractive or repulsive. Since the discovery of the van der Waals interactions by Johannes Diderik van der Waals in the 1870's, it has been known as an attractive interaction. Therefore, repulsive van der Waals interaction has been rarely studied and has never been used. In this presentation, repulsive van der Waals interactions in ultracold atoms between different spins will be investigated. This study will analyze the density range for using ultracold atoms as an alternative energy source.

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