世纪物理情·系列讲座

Microwave-shielded polar molecules

【摘要】

We show that the effective interaction potential between microwave-shielded polar molecules consists of an anisotropic van der Waals-like shielding core and a modified dipolar interaction. This effective potential is validated by comparing its scattering cross-sections with those calculated using intermolecular potential involving all interaction channels. It is shown that a scattering resonance can be induced under microwave fields and a field-link tetramer bound state emerges. With the effective potential, we further study the Bardeen-Cooper-Schrieffer pairing in microwave-shielded molecular gas. We show that the superfluid critical temperature is drastically enhanced near the resonance.

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University in 2006. He received his PhD from the Institute of Theoretical Physics, Chinese Academy of Sciences in 2011. From 2011 to 2017, he conducted postdoctoral research at Max Planck Institute for Quantum Optics in Germany. He joined the Institute of Theoretical Physics of the Chinese Academy of Sciences as an associate researcher in 2017 and has been a researcher since 2021. His research interests are quantum physics, quantum information and the theory of the interaction between light and matter.

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