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Adiabatic Interaction between Rydberg Atom and Ground-State Atom

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The adiabatic interaction between Rydberg atom and ground-state atom of Rb2 was numerically investigated. The semi-molecular potentials were calculated by matching the wave function of Rydberg electron using Kirchhoff integral with Coulomb Green's function that corporates the quantum defect correction. The interaction potential was employed to pinpoint the principle quantum number of particular rubidium-85 Rydberg atom that demonstrates crucial structure demanded by our novel Rydberg-assisted single-atom trapping scheme.

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