Abstract Submitted
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Pressure broadening of the sodium $3s$-$3p$ resonance lines by helium atoms. CHENG ZHU, JAMES BABB, ALEX DALGARNO, Harvard University — Quantum mechanical calculations are performed of the emission and absorption profiles of the sodium $3s$-$3p$ resonance lines under the influence of a helium perturbing gas. We use carefully constructed potential energy surfaces and transition dipole moments to compute the emission and absorption coefficients at temperatures $T = 158$, 240, 403, 500, 1000, 2000 and 3000 K at wavelengths between 500 nm and 760 nm. Contributions from quasi-bound states are included. The resulting red and blue wing profiles are compared with previous theoretical calculations and experimental measurements. Supported in part by NSF and NASA.

Cheng Zhu

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