A NEW LINE LIST FOR THE N2 SECOND POSITIVE SYSTEM

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The second positive system ($C^3\Pi_u$ - $B^3\Pi_g$) for N_2 has been widely used for optical diagnostics in plasma systems, hypersonic environments, and astrophysics. To this end, a spectrally accurate linelist has been generated for the second positive band system. Ab initio potential energy curves (PECs) and the transition dipole moment (TDM) from Ni and Cheng [1] have been used to calculate new electronic-vibrational transition moments, extending up to v = 29 for the $B^3\Pi_g$, using the DUO program. Spectral constants from Western et al. [2] and Roux et al. [3] have been compiled along with the new electronic-vibrational transition moments in PGOPHER software to generate the new linelist. Comparisons to experimental data and the SpecAir software have been used to validate the new linelist.

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