

## THE PURE ROTATIONAL SPECTRUM OF THE SiP RADICAL ( $X^2\Pi_i$ )

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The millimeter-wave spectrum of the SiP radical in its  $X^2\Pi_i$  ground electronic state has been recorded using direct absorption spectroscopy in the frequency range 151 – 532 GHz. The species was synthesized in an AC discharge by the reaction of  $\text{SiH}_4$  and red phosphorous, in argon carrier gas. Both lambda-doubling and hyperfine splittings, from the phosphorus nuclear spin ( $I = 1/2$ ), were observed in both spin-orbit ladders,  $\Omega = 3/2$  and  $1/2$ . The  $\Omega = 1/2$  ladder appears to be perturbed, presumably by the nearby  $A^2\Sigma$  state, as suggested by previous optical data. The data were analyzed with a Hund's case (a) Hamiltonian, establishing global spectroscopic constants. A deperturbation analysis was also conducted, further refining the  $\Pi$ - $\Sigma$  interaction.