

# Hyperfine Structure, Lifetimes and Oscillator Strengths of V II

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In First part of this work we confirmed the well-founded basis of new experimental data for some V II levels, recently published, through hyperfine structure constant values calculated for the first time,. Furthermore a good agreement is observed between single-step excitation and laser induced fluorescence V II radiative lifetimes found in literature data and our computed values recurring to ab-initio method.

In this study we also examined electric dipole transitions. We transformed angular coefficients of the transition matrix from SL coupling to intermediate one recurring to Racah algebra and using fine structure eigenvector amplitudes, previously determined. Transition integrals, treated as free in the least squares fit to experimental oscillator strength (gf) values [1–2] were then extracted; we give the two main deduced values:  $\langle 3d^34p|r^1|3d^34s \rangle = -3.0346 \pm 0.0094$ ,  $\langle 3d^34p|r^1|3d^4 \rangle = 0.8278 \pm 0.0026$  Finally, for a complete list of permitted transitions from depopulated odd-parity levels, gf values are predicted in a wide wavelength range: 2110-96000 Å.

## References

[1] J. Ruczkowski, , M. Elantkowska , J. Dembczynski J.Q.S.R.T. **145**, 20–42 (2014)

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