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Progress Report

SATELLITE SPECTRA FOR HYDROGEN PERTURBED BY OSCILLATING FIELDS

R. Stamm[1], I. Hannachi[1,2], M. Meireni[1], J. Rosato[1] and Y. Marandet[1]

[1] *PIIM, Aix-Marseille Université-CNRS, centre Saint Jérôme, 13397 Marseille, France*
[2] *PRIMALAB, Faculty of Sciences, University of Batna 1, Batna, Algeria*

E-mail: roland.stamm@univ-amu.fr

A simple case for studying the effect of oscillating electric field on spectral line shapes in a plasma consists in taking a fixed magnitude E_0 for the perturbing electric field $E_0\cos(\omega t + \varphi)$, with ω and φ the frequency and phase of the field. Such a situation is observed in many laboratory plasmas when the oscillating field is created by external power systems in various electromagnetic frequency bands such as found with microwave generator (VHF, UHF, or microwaves), or laser radiation. For such a field, one expects the observation of a Blochinzew spectra [1], consisting of satellites separated by multiples of the oscillation frequency ω. Using a simple model, we will study on Lyman lines the conditions which are required for observing such a spectra in various plasma conditions.

References

[1] Blochinzew, D. I.: 1933, *Phys. Z. Sov. Union*, **4**, 501.