



Photoionization Cross Sections of P II: Theory \& Measurement

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Abstract

Features of photoionization of ground and many excited states ($n \leq 10$) of P II are studied experimentally and theoretically. The ion is commonly formed in ECR ion sources and photionized. Photoionization cross sections of P II are needed for spectral analysis, but very little data are available. Experiment is done at Advanced Light Source at LLNL. Calculations are carried out in relativistic Breit-Pauli R-matrix method in close coupling approximation using a wave function of 18 levels of the core. Photoionization of the ground $3s^2 3p^2 (^3P_0)$ and low lying excited levels show low energy resonances with a broad feature indicating high probability of ionization. Theoretical results agree and identify the combined features of measurements. Comparison as well as other features, particularly of Seaton resonances due to photo-excitation of core, in the photoionization cross sections will be illustrated. Photoionization cross sections of 475 levels will be reported.

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