

Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

A Multiquantum State-to-State Database for Dissociation in Air Plasmas MÁRIO LINO DA SILVA, VASCO GUERRA, JORGE LOUREIRO, Instituto de Plasmas e Fusão Nuclear - Laboratório Associado, Instituto Superior Técnico, 1049-001 Lisboa, Portugal — The modelling of dissociation in high-temperature plasmas, with translational temperature in excess of 1,000-2,000K, mandates the application of detailed state-resolved models. In fact, the traditional first-order approaches, such as the SSH theory, begin to fail, yielding overestimated rates and neglecting multiquantum transitions. The multiquantum Forced Harmonic Oscillator method has instead been considered for N₂ and O₂ diatom-diatom dissociation rates, whereas semiclassical rates recently published by the Bari group have been considered for N₂ and O₂ atom-diatom dissociation rates. Finally, Zeldovich rates for the formation of NO have been selected from the literature. The resulting model provides an improved simulation of the dissociation processes in air plasmas.

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Date submitted: 11 Jun 2010

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