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A Lagrangian Interpretation of Laser Induced Fluorescence Signals in a Plasma[1] FENG CHU, FRED SKIFF, JORGE BERUMEN, SEAN MATTINGLY, RYAN HOOD, University of Iowa — Laser induced fluorescence (LIF) is a nonintrusive diagnostic technique that has found applications in the study of a wide range of fundamental and applied problems. Thus it is important to make a correct interpretation of LIF signals. We adopt a Lagrangian approach to model LIF signals by introducing a non-linear conditional probability function P(x,v,t;x',v',t'). A simulation is performed to compute the LIF signals and the results are presented. We investigate how mean-field waves affect these signals and metastable state birth rates. The ultimate goal is to construct the complete model for LIF signals by combining optical pumping, mean-field wave effect and metastable state birth rate modulation.

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