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Towards Cooperative Resonance Effects in Rubidium Vapor MATTHEW MORRISON, ZHENHUAN YI, CHRIS O'BRIEN, BRETT HOKR, ALEXEI SOKOLOV, Texas A&M University, GOMBOJAV ARIUNBOLD, Texas A&M University, National University of Mongolia, MARLAN SCULLY, Texas A&M University, Princeton University, Baylor University — We study characteristics of fluorescence generated in rubidium vapor orthogonally to an input beam. In particular, the emissions' dependence on the detuning of the input field and the atomic number density (and therefore the collective frequency) is investigated. Our preliminary results show that there is an optimum number density to achieve maximal emission and that this optimum density depends on how far the input beam is detuned from the D1 transition of rubidium. These results are obtained using a narrow line geometry for the input beam profile. This ongoing work promises to shed light on understanding cooperative resonance effects in rubidium vapor.

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