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Fluctuations in Yoked-Superfluorescence Delay Times ARIUNBOLD GOMBOJAV, VLADIMIR SAUTENKOV, MARLAN SCULLY, Institute for Quantum Studies and Department of Physics, Texas A&M University, College Station, Texas 77843, USA — We study fluctuations in yoked-superfluorescence (YSF) generated in rubidium atomic vapor. The dense atomic vapor is initially excited to 5D from 5S state, via two-photon processes with femtosecond laser pulses through 5P intermediate level. The YSF emission on the 6P-5S transition at 420 nm is recorded using a streak camera with picosecond time resolution. The time duration of the generated YSF is tens of picoseconds which is much shorter than any time scale of the relaxation processes including spontaneous emissions and dephasing. The dependence of time delay between reference/input pulse and YSF is measured as atomic density and/or input power is varied. With the help of the secondary input pulse, the relative delay between pair of generated YSF pulses is studied experimentally. This may allow us to understand more deeply quantum fluctuations in YSF delay time.

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