

## ΓΕΝΙΚΟ ΣΕΜΙΝΑΡΙΟ ΤΜΗΜΑΤΟΣ ΦΥΣΙΚΗΣ

# PHYSICS COLLOQUIUM

Thursday, 8 February 2018

17:00 -18:00

3<sup>rd</sup> Floor Seminar Room

### "Field Fluctuations and Photon Statistics in Radiation-Matter Interactions"

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#### **Abstract**

*Half a century ago, it was shown that "incoherent" light is more efficient than "coherent" light in inducing a non-linear process. A limited number of experimental results have been in general agreement with that prediction. Yet, to this day, that statement is greeted with disbelief, even by audiences who should have known better. The story and content of the talk revolves around the quantum stochastic properties of radiation, as reflected in its correlation functions. Correlation functions are important tools in many quantum systems, as they provide information well beyond average (expectation) values of dynamical variables. As such they serve as probes of quantum systems. In the case of radiation, however, they turn out to also be tools for inducing counterintuitive effects in radiation-matter interactions. The intent of the talk is pedagogical, going through the basics of the stochastic properties of radiation and illustrative examples of how those properties affect its interaction with electrons.*