

MAS21-2021-000096

Abstract for an Invited Paper  
for the MAS21 Meeting of  
the American Physical Society

**Characterizing weak impulsive narrowband radio emissions from the quiet solar corona**<sup>1</sup>

SURAJIT MONDAL, New Jersey Institute of Technology

In the past decade, significant advances have been made towards understanding and solving the coronal heating problem. There has been a number of observational evidences which suggest that the hypothesized "nanoflares" play a significant role in heating the corona. However to the best of our knowledge, these studies mainly focussed on understanding heating of the corona in the vicinity of the active regions, which are generally regions which harbor strong magnetic field. However the quiet corona is also hot, and often comprises the bulk of the corona. So it is equally important to understand the physical processes which maintain it at MK temperatures. If these nanoflares are happening even in the quiet solar corona, transient radio emissions are expected to be observed from the quiet sun. Hence detection these weak transient emissions would suggest that small scale reconnections are happening through out the corona and giving rise to nanoflares. By pushing the detection threshold of non-thermal emission by about two orders of magnitude lower than previous studies, Mondal et al. (2020) uncovered evidence of ubiquitous presence of reconnections throughout the quiet sun. We are continuing to explore different aspects of these impulsive nonthermal emissions, ranging from their spectral characteristics, temporal properties, energetics etc. I will summarize the status of these investigations in this presentation.

<sup>1</sup>Characterising weak impulsive narrowband radio emissions from the quiet solar corona