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On modelling the Fast Radio Burst population and event rate predictions

Fast Radio Bursts (FRB) are highly energetic ($\sim 10^{33}$ J), short duration (ms) radio pulses. The dispersion and the scatter broadening in the observed pulse width of the detected FRBs exhibit the propagation effect in the cold ionized plasma of the interstellar medium of the Milky Way and the host galaxy of the source and the intergalactic medium. The exact source mechanism of FRBs and its energy distribution are still matters of debate. The recent literatures have shown the connection between the high energetic neutrino and the Fast Radio Burst, but there is no detection of neutrino emission from FRBs with six years of IceCube Data to date. Those uncertainties can be addressed with the help of statistical inference. The detection of a large number of FRBs by using low frequency radio telescope can answer some of those questions.

In the first half of my talk, I will discuss our generic model for the event rate estimation of FRBs for any radio telescope with given parameters and I will show our predictions for the Ooty Wide Field Array (OWFA) and the upgraded Giant Meterwave Radio Telescope (uGMRT).

In the second half of my talk, I will try to constrain the energy distribution and the spectral index of FRBs along with the scattering mechanism in the intergalactic medium by using statistical hypothesis testing.

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