Nonlinear Analysis of Decimetric Solar Bursts

Fernandes, Francisco; **Rosa, Reinaldo**; **Alves Bolzan, Maurício José**; **Sawant, Hanumant**

The solar radio emissions in the decimetric frequency range (above 1000 MHz) are very rich in temporal and/or spectral fine structures whose temporal pattern variability is related to nonlinear processes occurring in the magnetic structure on the corresponding active region. In this paper we obtained the gradient spectra, G(α), and singularity spectrum, f(α) , taking into account the multifractal approach to study the turbulence-like signature coming from the underlying physics involving a complex magnetic loop interactions. Results from show intermittent behavior on small scales and G(alpha) a turbulent spectra of -1.5 for many time scales. We interpret our findings as evidence of inhomogeneous MHD turbulence where a multifractal magnetic process is a candidate for the underlying process driving the intermittent burst events observed in the range of 1.6 to 3 GHz .

Publication:
37th COSPAR Scientific Assembly. Held 13-20 July 2008, in Montréal, Canada., p.870

Pub Date:
2008

Bibcode:
2008cosp...37..870F

Comments:
Symposium E, session 22 (oral). Paper number: E22-0048-08