Random scars

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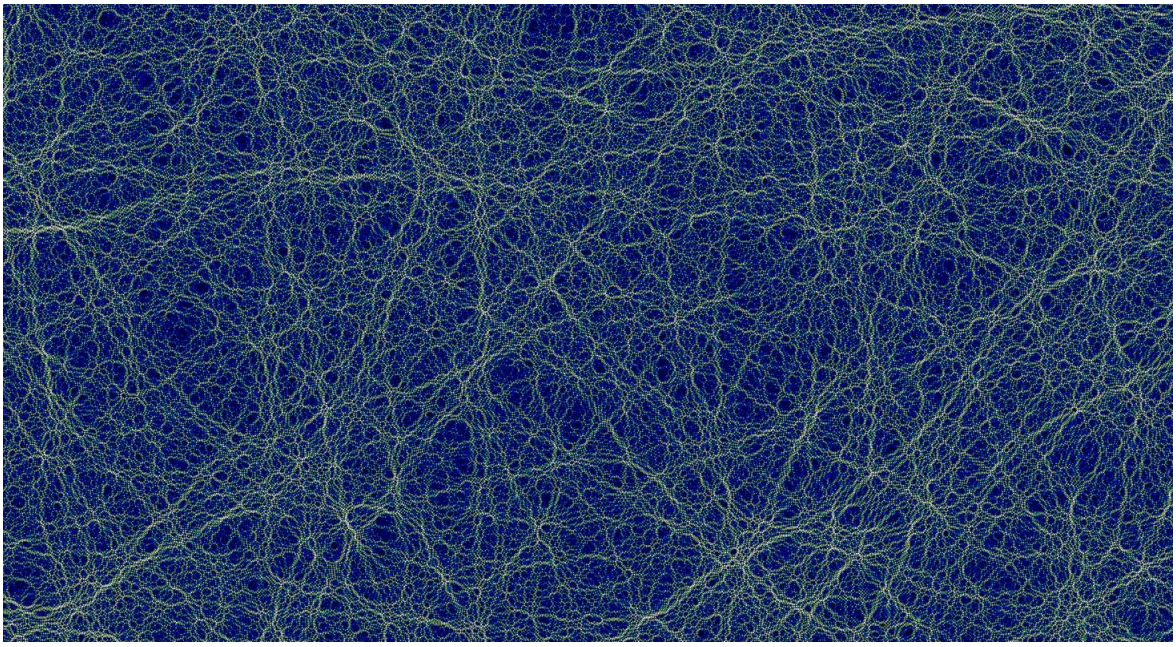
We consider a model of random functions on the plane obtained by adding a large number of sine waves, with random directions and amplitudes. On large windows, an interesting phenomenon appears : it looks like high values of the fields concentrate along "scars".



The goal of this project is split into two : A theoretical part, to understand the fundamental theory of stationary Gaussian processes and the notion of spectral measure, and a numerical part, i.e. to numerically explore the robustness of random scars, by changing some parameters of the model.

Literature : Azais–Wschebor, *Level Sets and Extrema of Random Processes and Fields*