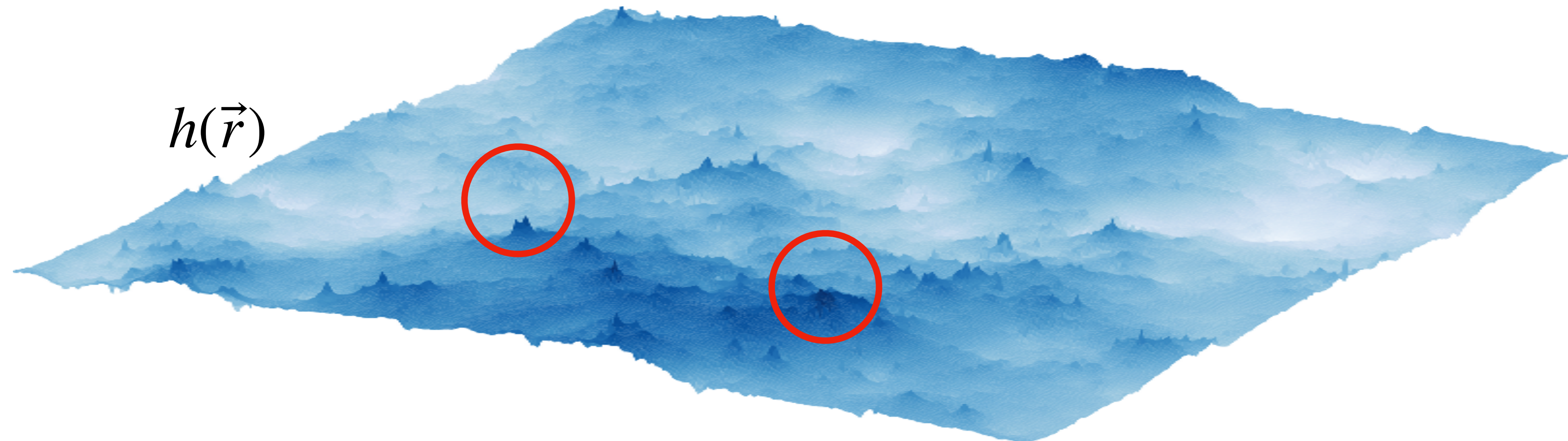# Wrapping and unwrapping multifractal fields

Samy Lakhal, Laurent Ponson, Michael Benzaquen, Jean-Philippe Bouchaud, Mahesh M. Bandi

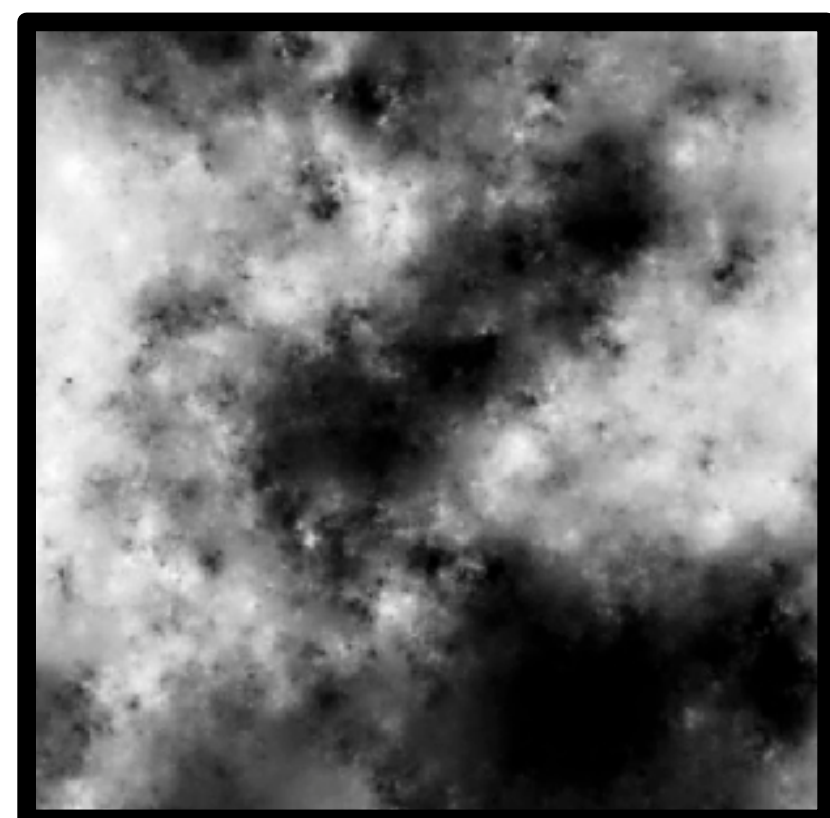$$\langle \, | h(r + \delta r) - h(r) |^q \, \rangle^{1/q} \propto \delta r^{H_q}$$

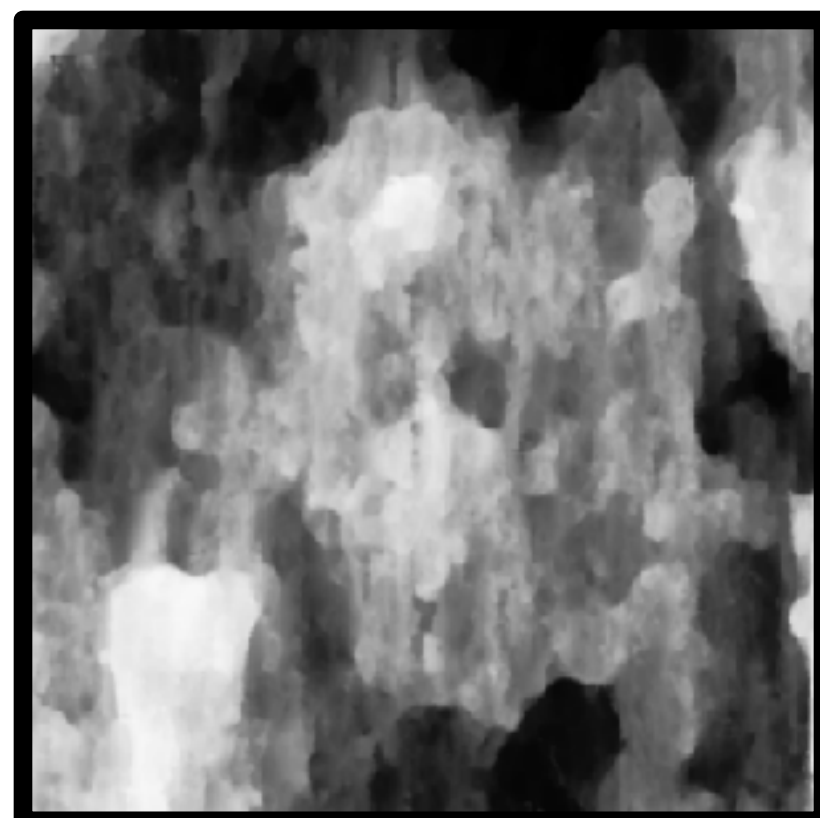$$H_q = H \rightarrow \text{Monofractal}$$

$$H_q \neq H \rightarrow \textbf{Multifractal}$$

$h(\vec{r})$

We compare synthetic fields & fracture surfaces by using their **volatility field.**

Multifractal field $h(r)$

Volatility field $\omega(r)$

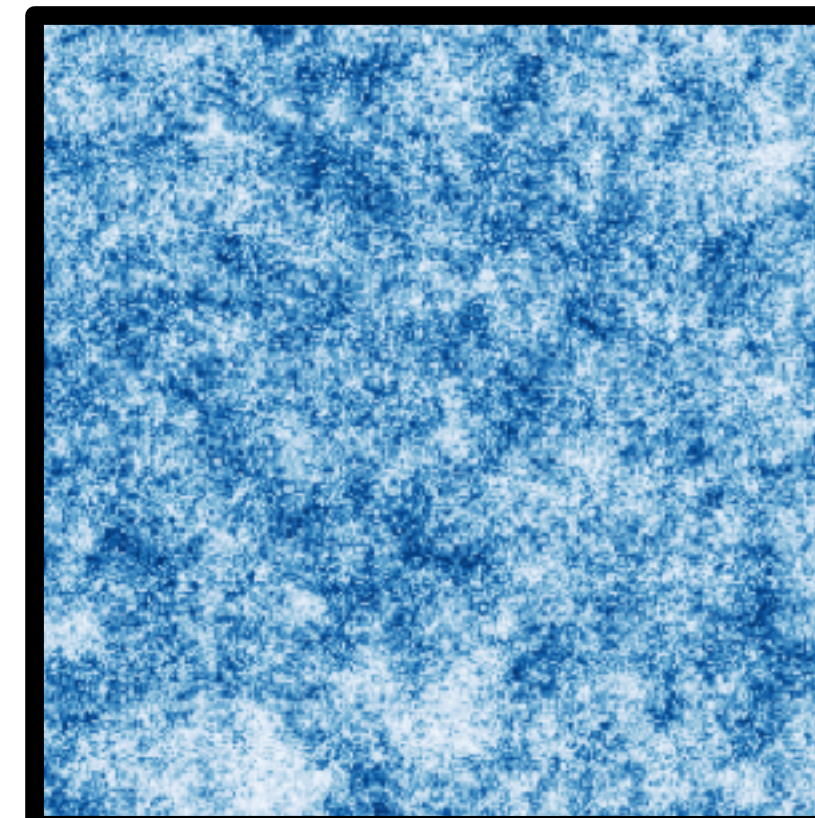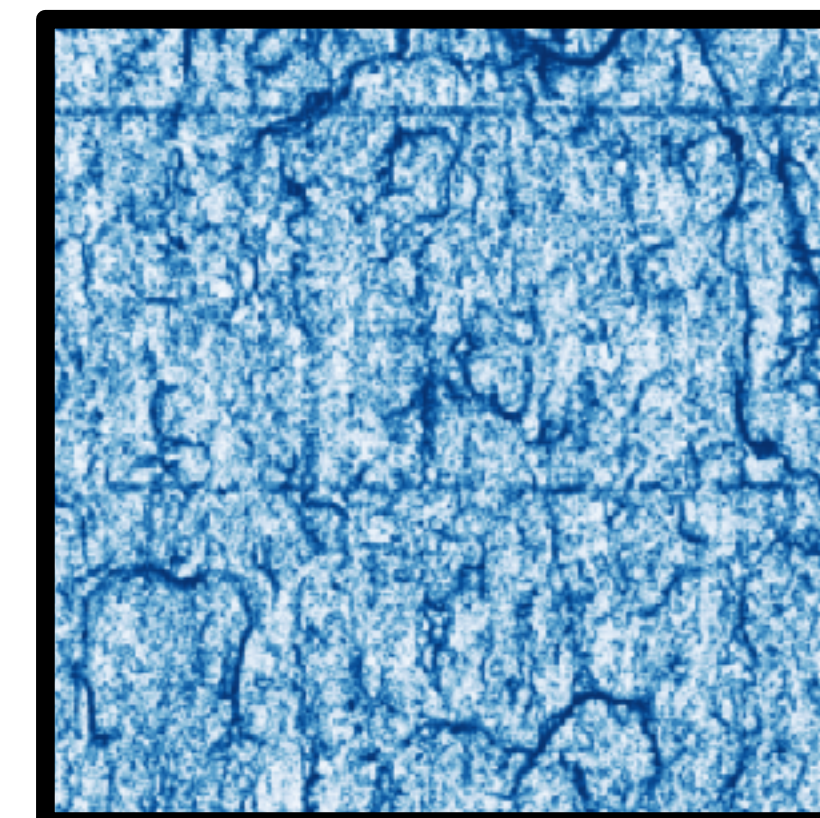**Unwrapping**

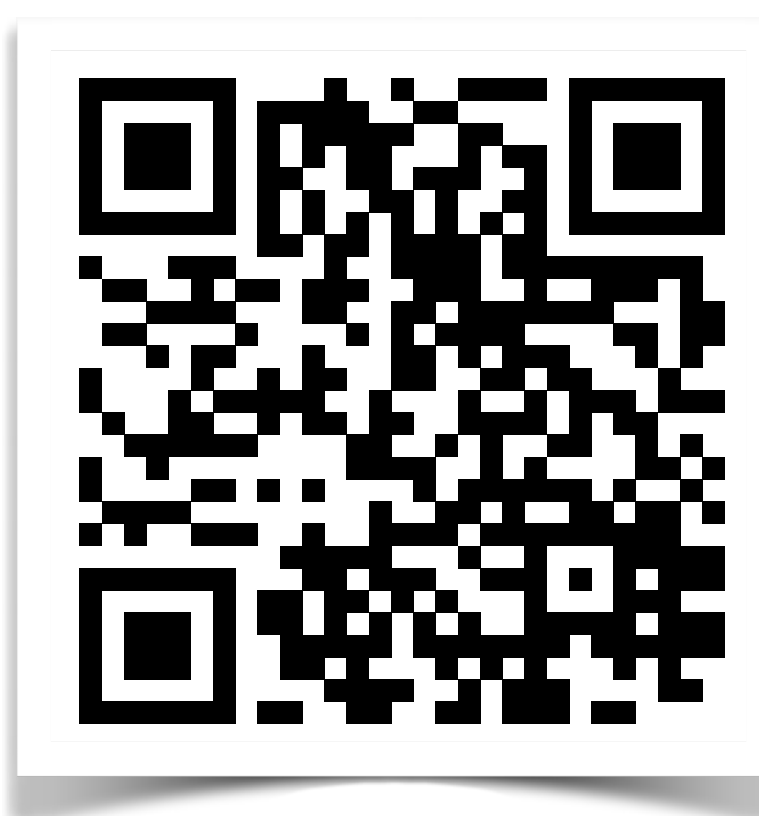$$\omega = \log|(-\Delta)^{\frac{H+d/2}{2}} h|$$

Synthetic   Experimental

Synthetic   Experimental

Thank you very much!

Link to full draft