**Gradient Gibbs measures with disorder**

Codina Cotar, University College London

We consider - in uniformly strictly convex potentials case - two versions of random gradient models. In model A) the interface feels a bulk term of random fields while in model B) the disorder enters though the potential acting on the gradients itself. It is well known that without disorder there are no Gibbs measures in infinite volume in dimension d=2, while there are gradient Gibbs measures describing an infinite-volume distribution for the increments of the field, as was shown by Funaki and Spohn. Van Enter and Kuelske proved that adding a disorder term as in model A) prohibits the existence of such gradient Gibbs measures for general interaction potentials in d=2. Cotar and Kuelske proved the existence of shift-covariant gradient Gibbs measures for model A) when d>=3 and the expectation with respect to the disorder is zero, and for model B) when d>=2.
In recent work with Kuelske, we proved uniqueness of shift-covariance gradient Gibbs measures with expected given tilt under the above assumptions. We also proved decay of covariances for both models.

We will also discuss in our talk some cases of non-convex potentials with disorder.