A General Piecewise Spline Maximum Entropy Method for Position Dependent Random Maps

Let \( \{\tau_1, \tau_2, \cdots, \tau_K\} \) be a collection of nonsingular maps on \([0, 1]\) into \([0, 1]\) and \( \{p_1(x), p_2(x), \cdots, p_K(x)\} \) be a collection of position dependent probabilities on \([0, 1]\) into itself. We consider position dependent random maps \( T = \{\tau_1, \tau_2, \cdots, \tau_K; p_1(x), p_2(x), \cdots, p_K(x)\} \) such that \( T \) preserves a unique absolutely continuous invariant measure \( \mu^* \) with density \( f^* \). In this talk, we describe a general piecewise spline maximum entropy method for the approximation of \( f^* \). We present a proof of convergence of the general piecewise spline maximum entropy method for position dependent random maps. We also present numerical examples.