1143-60-560 **Jun Yin***, 520 Portola Plaza, Los Angeles, CA 90095, and **Horng-Tzer Yau**, **Paul Bourgade** and **Fan Yang**. *Universality and Delocalization for Random Band Matrices.*

Consider $N \times N$ symmetric one-dimensional random band matrices with general distribution of the entries and band width $W \gg N^{3/4+\epsilon}$ for any $\epsilon > 0$.

In the bulk of the spectrum and in the large N limit, we obtain the following results.

1. The semicircle law holds up to the scale $N^{-1+\epsilon}$ for any $\epsilon > 0$.

2. The eigenvalues locally converge to the point process given by the Gaussian orthogonal ensemble at any fixed energy.

3. All eigenvectors are delocalized, meaning their L_∞ norms are all simultaneously bounded by $N^{-1/2+\epsilon}$ (after normalization in L_2) with overwhelming probability, for any $\epsilon > 0$.

4. Quantum unique ergodicity holds, in the sense that the local L_2 mass of eigenvectors becomes equidistributed with overwhelming probability.

For general distribution, the previous best result requires $W = \Omega(N)$. (Received August 21, 2018)