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Propagation of singular behavior for Gaussian perturbations of random matrices.

It is a well known and celebrated fact that the eigenvalues of random Hermitian matrices from a unitary ensemble form a determinantal point process with correlation kernel given in terms of a system of orthogonal polynomials on the real line. It is a much more recent fact that the eigenvalues of the sum of such a random matrix with a matrix from the Gaussian unitary ensemble (GUE) also forms a determinantal point process, with the kernel given in terms of the Weierstrass transform of the original kernel. I'll talk about the case in which the limiting distribution of eigenvalues is critical in the sense that there is a non-trivial scaling limit for the correlation kernel, and discuss the effect of a Gaussian perturbation on the limiting critical kernel. This is joint work with Tom Claeys, Arno Kuijlaars, and Dong Wang. (Received February 13, 2018)