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Title and Abstract:

**Asymptotic analysis of a deformed Tracy-Widom distribution**
The Tracy-Widom distribution functions describing the fluctuations of the largest eigenvalue of a GOE, GUE, or GSE random matrix can be expressed in terms of the Hastings-McLeod and Ablowitz-Segur solutions of the second Painleve equation.  Bohigas, de Carvalho, and Pato observed a transition from Tracy-Widom to classical Weibull statistics by removing each eigenvalue with a fixed probability.  We rigorously compute the leading-order left-tail asymptotics of the thinned GOE, GUE, and GSE Tracy-Widom distributions, thereby proving a conjecture of Bogatskiy, Claeys, and Its.  As a corollary, we obtain a new total-integral formula involving the Ablowitz-Segur solutions.