



Mathematics > Probability

# Continuum statistics of the Airy<sub>2</sub> process

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We develop an exact determinantal formula for the probability that the Airy<sub>2</sub> process is bounded by a function  $g$  on a finite interval. As an application, we provide a direct proof that  $\sup(\text{aip}(x)-x^2)$  is distributed as a GOE random variable. Both the continuum formula and the GOE result have applications in the study of the end point of an unconstrained directed polymer in a disordered environment. We explain Johansson's [Joh03] observation that the GOE result follows from this polymer interpretation and exact results within that field. In a companion paper [MQR11] these continuum statistics are used to compute the distribution of the endpoint of directed polymers.

Comments: More details added, some minor mistakes corrected

Subjects: **Probability (math.PR)**; Mathematical Physics (math-ph)

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