



Non-linear PDEs for gap probabilities in random matrices and KP theory

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Résumé en anglais	Airy and Pearcey-like kernels and generalizations arising in random matrix theory are expressed as double integrals of ratios of exponentials, possibly multiplied with a rational function. In this work it is shown that such kernels are intimately related to wave functions for polynomial (Gelfand-Dickey) reductions or rational reductions of the KP-hierarchy; their Fredholm determinant also satisfies linear PDEs (Virasoro constraints), yielding, in a systematic way, non-linear PDEs for the Fredholm determinant of such kernels. Examples include Fredholm determinants giving the gap probability of some infinite-dimensional diffusions, like the Airy process, with or without outliers, and the Pearcey process, with or without inliers.
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