

Contribution Title: RANDOM MATRICES WITH EXTERNAL SOURCE  
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We consider the random matrix model with external source

$$\frac{1}{Z_n} \exp(-n(\text{Tr}V(M) - AM))dM$$

where the external source  $A$  has two distinct eigenvalues of equal multiplicities. In the Gaussian case the model is equivalent to a model of non-intersecting Brownian motions, and a phase transition occurs that is described by Pearcey integrals. For a general even polynomial potential  $V$  we present a vector equilibrium problem for the asymptotic density of eigenvalues. The equilibrium problem indicates that the Pearcey phase transition is non-generic.