Abstract. I will report on a recent joint work with Arno Kuijlaars. The eigenvalue statistics of a pair \((M_1, M_2)\) of \(n \times n\) Hermitian matrices taken random with respect to the measure

\[
\frac{1}{Z_n} \exp \left( - n \text{Tr}(V(M_1) + W(M_2) - \tau M_1 M_2) \right) dM_1 dM_2
\]

can be described in terms of two families of biorthogonal polynomials. I will discuss a rigorous approach to obtain the asymptotic for one of the families of biorthogonal polynomials in the special case \(W(y) = y^4/4\) and \(V\) an even polynomial. As a result we obtain the limiting behavior of the correlation kernel associated to the eigenvalues of \(M_1\) (when averaged over \(M_2\)) in the global and local regime as \(n \to \infty\). A special feature in the analysis is the introduction of a vector equilibrium problem involving both an external field and an upper constraint.