



Mathematics > Probability

# A diffusive matrix model for invariant $\beta$ -ensembles

Romain Allez, Alice Guionnet

(Submitted on 7 Jun 2012)

We define a new diffusive matrix model converging towards the  $\beta$ -Dyson Brownian motion for all  $\beta \in [0, 2]$  that provides an explicit construction of  $\beta$ -ensembles of random matrices that is invariant under the orthogonal/unitary group. We also describe the eigenvector dynamics of the limiting matrix process; we show that when  $\beta < 1$  and that two eigenvalues collide, the eigenvectors of these two colliding eigenvalues fluctuate very fast and take the uniform measure on the orthocomplement of the eigenvectors of the remaining eigenvalues.

Subjects: **Probability (math.PR)**; Statistical Mechanics (cond-mat.stat-mech)

Cite as: [arXiv:1206.1460](#) [math.PR]  
(or [arXiv:1206.1460v1](#) [math.PR] for this version)

## Submission history

From: Romain Allez [[view email](#)]  
[v1] Thu, 7 Jun 2012 11:58:18 GMT (33kb)

*Which authors of this paper are endorsers?*

Link back to: [arXiv](#), [form interface](#), [contact](#).

## Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

Current browse context:

math.PR

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1206](#)

Change to browse by:

- [cond-mat](#)
- [cond-mat.stat-mech](#)
- [math](#)

## References & Citations

- [NASA ADS](#)

Bookmark [\(what is this?\)](#)

