

# Non-Hermitian Random Matrices: 50 Years After Ginibre

Research Workshop of the Israel Science Foundation

Yad Hashmona, Judean Hills, Israel | October 22—27, 2014



## Schedule

### October 22 – Wednesday

#### Afternoon Session

Chair: Paul Wiegmann

|               |                     |  |
|---------------|---------------------|--|
| 16:30 - 16:40 | Opening             |  |
| 16:40 - 17:20 | Hans Weidenmüller   | Quantum graphs and random-matrix theory  |
| 17:20 - 18:00 | Yan Fyodorov        | Random matrix theory for resonances in chaotic scattering: A short overview                                  |
| 18:00 - 18:40 | Valentin Sokolov    | Elastic enhancement factor as an indicator of peculiarities of the internal dynamics of open quantum systems |
| 19:00         | <i>Get-Together</i> |  |
| 19:30         | <i>Dinner</i>       |  |

### October 23 – Thursday

#### Morning Session

Chair: Hans Weidenmüller

|               |                     |   |
|---------------|---------------------|---|
| 07:00 - 08:45 | <i>Breakfast</i>    |   |
| 09:00 - 09:40 | Carlo Beenakker     | Majorana zero-modes and the Ginibre ensemble                                  |
| 09:40 - 10:20 | Henning Schomerus   | Non-Hermitian transport and topological protection in photonic systems        |
| 10:20 - 10:50 | <i>Coffee Break</i> |   |
| 10:50 - 11:30 | Pedro Vidal         | Statistics of reflection eigenvalues of chaotic cavities with non-ideal leads |
| 11:30 - 12:10 | Felix Izrailev      | Non-Hermitian matrix approach to disordered tight-binding models              |
| 12:10 - 12:50 | Sergey Skipetrov    | Euclidean random matrices for waves in random media                           |
| 13:00 - 14:30 | <i>Lunch</i>        |   |

**October 23 – Thursday****Afternoon Session****Chair: Boris Khoruzhenko**

|               |                     |  |
|---------------|---------------------|--|
| 14:30 - 15:10 | Maciej Nowak        | Dysonian dynamics of the Ginibre ensemble                  |
| 15:10 - 15:50 | Oleg Zaboronski     | Ginibre evolutions and interacting particle systems        |
| 15:50 - 16:30 | Alexander Orlov     | Ginibre ensembles and the BKP hierarchy                    |
| 16:30 - 17:00 | <i>Coffee Break</i> |  |
| 17:00 - 17:40 | Andrzej Jarosz      | Quantum dots and Jack polynomials                          |
| 17:40 - 18:20 | Boris Gutkin        | Universality in spectral statistics of open quantum graphs |
| 18:20 - 19:00 | Poster Session A    |  |
| 19:00 - 20:00 | <i>Dinner</i>       |  |

**October 24 – Friday****Morning Session****Chair: Yan Fyodorov**

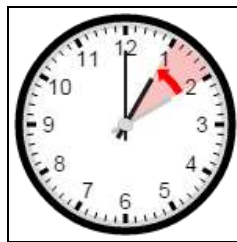
|               |                                     |  |
|---------------|-------------------------------------|--|
| 07:00 - 08:30 | <i>Breakfast</i>                    |  |
| 08:40 - 09:20 | Alexander Tikhomirov                | Circular law and its generalizations   |
| 09:20 - 10:00 | Hoi Nguyen                          | On the concentration of random multilinear forms and the universality of random block matrices |
| 10:00 - 10:40 | Manjunath Krishnapur                | Hole probabilities in the Ginibre ensemble   |
| 10:40 - 11:00 | <i>Coffee Break</i>                 |  |
| 11:00 - 11:40 | Karol Zyczkowski                    | Numerical range and non-Hermitian random matrices  |
| 11:40 - 12:20 | Arul Lakshminarayan                 | Matrices of random phases: The unimodular ensemble   |
| 12:20 - 13:00 | Jonathan Breuer                     | A central limit theorem for biorthogonal ensembles   |
| 13:00 - 14:30 | <i>Lunch</i>                        |  |
| 16:00         | <i>Walking Tour in Yad Hashmona</i> |  |
| 17:30         | <i>Departure to Jerusalem</i>       |  |
| 19:00         | <i>Concert</i>                      |  |
| 21:00 - 22:00 | <i>Dinner</i>                       |  |

## October 25 – Saturday

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- 07:00 - 08:45      **Breakfast**
- 09:00 - 18:00      **Full day excursion in Jerusalem**
- 20:00                **Workshop Dinner**

**Daylight Saving Time ends: clocks are adjusted backward one hour  
on October 26 at 02:00**



## October 26 – Sunday

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**Morning Session**

**Chair: Jac Verbaarschot**

- 07:00 - 08:45      **Breakfast**
- 09:00 - 09:40      **Arthur Goetschy**                Random Green's operators in disordered open media
- 09:40 - 10:20      **Eric Akkermans**                Cooperative effects and photon localization in atomic gases
- 10:20 - 10:50      **Coffee Break**
- 10:50 - 11:30      **Nir Davidson**                Measuring maximal eigenvalue distribution of Wishart random matrices with coupled lasers
- 11:30 - 12:10      **Boris Khoruzhenko**                A nonlinear analogue of May-Wigner instability transition
- 12:10 - 12:50      **Gernot Akemann**                Universal distribution of Lyapunov exponents for products of Ginibre matrices
- 13:00 - 14:30      **Lunch**

**October 26 – Sunday****Afternoon Session****Chair: Gernot Akemann**

|                      |                         |   |
|----------------------|-------------------------|---|
| <b>14:30 - 15:10</b> | <b>Mario Kieburg</b>    | A new approach of SUSY for the complex Ginibre ensemble |
| <b>15:10 - 15:50</b> | <b>Semyon Klevtsov</b>  | Random normal matrices and Kahler metrics               |
| <b>15:50 - 16:30</b> | <b>Tankut Can</b>       | Fractional quantum Hall effect in a curved space        |
| <b>16:30 - 17:00</b> | <b>Coffee Break</b>     |   |
| <b>17:00 - 17:40</b> | <b>Eldad Bettelheim</b> | Large-N limit of Bethe Ansatz wavefunction overlaps     |
| <b>17:40 - 18:20</b> | <b>Anton Zabrodin</b>   | Large-N expansion of $\beta$ -ensembles                 |
| <b>18:20 - 19:00</b> | <b>Poster Session B</b> |   |
| <b>19:00 - 20:00</b> | <b>Dinner</b>           |   |

**October 27 – Monday****Morning Session****Chair: Maciej Nowak**

|                      |                             |  |
|----------------------|-----------------------------|--|
| <b>07:00 - 08:30</b> | <b>Breakfast</b>            |  |
| <b>08:40 - 09:20</b> | <b>Roman Riser</b>          | Universality of higher order corrections in random normal matrices                   |
| <b>09:20 - 10:00</b> | <b>Rostyslav Kozhan</b>     | Rank one perturbations of Hermitian and unitary $\beta$ -ensembles                   |
| <b>10:00 - 10:40</b> | <b>Christopher Joyner</b>   | A discrete random walk approach for the singular values of random Bernoulli matrices |
| <b>10:40 - 11:00</b> | <b>Coffee Break</b>         |  |
| <b>11:00 - 11:40</b> | <b>Francesco Mezzadri</b>   | High degree singularities in log-gases partition functions                           |
| <b>11:40 - 12:20</b> | <b>Jac Verbaarschot</b>     | Non-Hermitian random matrix theories and QCD   |
| <b>12:20 - 12:30</b> | <b>Closing</b>              |  |
| <b>13:00 - 14:30</b> | <b>Lunch and departures</b> |  |