series of lectures

Random matrix theory
and
Free probability

Who is speaking? Piotr Śniady, `psniady@impan.pl`

What is free probability theory? *Free probability* is a very non-commutative probability theory which turns out to describe asymptotic behavior of random matrices and asymptotic behavior of representations of groups. It was conceived with the hope it would solve the *free group factors isomorphism problem* and it is strongly linked to the theory of operator algebras.

What is this series of lectures about? The general plan is to look on the books of Nica & Speicher and Mingo & Speicher for cool and entertaining topics, preferably related to asymptotics of random matrices, matrix integrals, Weingarten calculus, combinatorics of non-crossing partitions.

For whom is this series of lectures? This series of lectures is intended for students and PhD students with no previous knowledge of the topic. However, if you happen to have a PhD, habilitation, professorship, etc. you are still very welcome to join us.

When? Where? Tuesdays, 12.15–14.00. Faculty of Mathematics and Computer Science, Nicolaus Copernicus University. Ul. Chopina 12/18, 87-100 Toruń, **room L6 (=D305)**.

Website. More details are available on the website

> `http://psniady.impan.pl/`
> $\rightarrow$ lecture notes, IMPAN lectures 2019/2020

References

[1] James A. Mingo and Roland Speicher. *Free probability and random matrices*, volume 35 of *Fields Institute Monographs*. Springer, New York; Fields Institute for Research in Mathematical Sciences, Toronto, ON, 2017.

[2] Alexandru Nica and Roland Speicher. *Lectures on the combinatorics of free probability*, volume 335 of *London Mathematical Society Lecture Note Series*. Cambridge University Press, Cambridge, 2006.