

SIMION STOILOW INSTITUTE OF MATHEMATICS OF THE ROMANIAN ACADEMY

Monthly conference:

A free probability approach to meandric systems

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Wednesday, October 11, 2023, 13:00h

IMAR, *Miron Nicolescu* amphitheater

Abstract: I will consider a family of diagrammatic objects (well-known to mathematical physicists and to combinatorialists) which go under the name of "meandric systems". These objects offer some very appealing, yet difficult problems -- in particular, denoting by E_n the expected number of components of a random meandric system of order n , it is not fully understood what is the asymptotic behaviour of E_n for large values of n . In 2022, Feray and Thevenin proved that the ratio E_n/n has a limit at infinity, and numerical experiments suggest the value of the limit to be around 0.23. In my talk, I will show how considerations on a basic notion of "free convolution" which is used in free probability theory (and will be reviewed as part of the talk) give a lower bound of 0.17 for the said limit. The arguments follow a joint work done with Ian Goulden and Doron Puder, IMRN 2020.