

# Probabilistic Operator Algebra Seminar

Organizer: Dan-Virgil Voiculescu

October 25    **Marcin Świeca**, Warsaw University of Technology

Title: *The Matsumoto-Yor property in free probability*

Let  $X$  and  $Y$  be independent, positive and nondegenerate random variables and let  $U = \frac{1}{X+Y}$  and  $V = \frac{1}{X} - \frac{1}{X+Y}$ . Then  $U$  and  $V$  are independent if and only if  $X$  has the Generalized Inverse Gaussian distribution  $GIG(-p; a; b)$  and  $Y$  has the Gamma distribution  $G(p; a)$  where  $a, b > 0$  and  $p \in \mathbb{R}$ . This property has been generalized to the framework of free probability and characterizes Marchenko-Pastur and free Generalized Inverse Gaussian laws. In my talk I will show how Boolean cumulants and subordination of additive free convolution can be used to prove regression versions of this characterization. This talk is based on my preprint arXiv:2109.12545.