## **Seminar of Probability and Stochastic Process**

Wednesday, 15th October, from 16h15 <u>CM 1113</u>, EPFL, Ecublens

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# Percolation on the stationary distribution of the voter model on Z^d

## Abstract:

Joint work with Balázs Ráth. The voter model on  $Z^d$  is a particle system that serves as a rough model for changes of opinions among social agents or, alternatively, competition between biological species occupying space. When the model is considered in dimension 3 or higher, its set of (extremal) stationary distributions is equal to a family of measures  $\mu_{\alpha}$ , for  $\alpha$  between 0 and 1. A configuration sampled from  $\mu_{\alpha}$  is a field of 0's and 1's on  $Z^d$  in which the density of 1's is  $\alpha$ . We consider such a configuration from the point of view of site percolation on  $Z^d$ . We prove that in dimensions 5 and higher, the probability of existence of an infinite percolation cluster exhibits a phase transition in  $\alpha$ . If the voter model is allowed to have long range, we prove the same result for dimensions 3 and higher. These results partly settle a conjecture of Bricmont, Lebowitz and Maes (1987).

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