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## PLENARY TALK

### Title

**Sharp Logarithmic-Sobolev Inequalities via Optimal Mass Transport**

### Speaker

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### Abstract

By using Optimal Mass Transport theory, we prove the sharp logarithmic-Sobolev inequality in the Euclidean space. The perk of our approach is that we are able to characterize the extremals in the logarithmic-Sobolev inequality. Moreover, we establish the sharp logarithmic-Sobolev inequality on Riemannian manifolds with non-negative Ricci curvature which involves the so-called asymptotic volume ratio, answering an open question of Cordero-Erausquin, Nazaret and Villani [Adv. Math., 2004]. These inequalities are related to the Fisher information, which is a crucial tool in the information theory.

### Short CV

Alexandru Kristály is a Full Professor at Óbuda University, Budapest, Hungary and Babes-Bolyai University, Cluj-Napoca, Romania.

He is a mathematician, working in the interface of Calculus of Variations and Geometric Analysis. He investigates various nonlinear phenomena arising from mathematical physics and (synthetic or differential) geometry where the curvature of the ambient space has a decisive role.

He received PhD degrees from the Babes-Bolyai University (2003), University of Debrecen (2005) and Central European University (2010). Habilitated both at the Babes-Bolyai University (2013) and Óbuda University (2015), he also received the title of Doctor in Science from the Hungarian Academy of Sciences (2019). He is a supervisor of 8 PhD Students (6 of them completed their studies). In May 2025, he became an external member of the Hungarian Academy of Sciences.

He published more than 100 scientific articles in peer reviewed journals, writing monographs at Cambridge University Press (2010) and Springer (2021), being cited in top mathematical journals by leading mathematicians, including also Fields medalists.

Number of D1 publications: 32.

Number of Q1 (not D1) publications: 35.

Google Scholar Citations: 2398.

H-index (Google Scholar): 28.

MathSciNet: 1314 citations by 826 authors.

Detailed publication list:

<https://m2.mtmt.hu/gui2/?type=authors&mode=browse&sel=10002077>

Web: <https://alexandrukristaly.wordpress.com/>