



Physics Innovation Via Optimal Transport

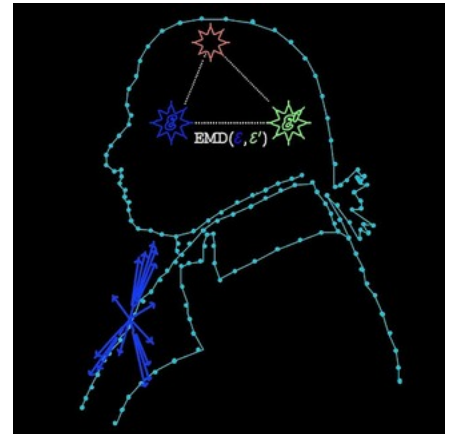
MARCH 1 - 5, 2027

Scientific Overview

Since the inception of modern physics, scientists have described the physical world through principles of least action, characterizing systems in terms of their behavior under “vertical” perturbations or variations. Inspired by the mathematical field of optimal transport (OT), recent years have seen a surge of interest from the physics community in a new type of perturbation: “horizontal” variations in the domain, in which a ground state is modeled as a measure and its distribution is rearranged via push forwards through transport maps.

This workshop will bring together international experts in cosmology, particle physics, quantum field theory, general relativity, and OT to examine how tools from OT can be applied to new problems in physics and how the development of physically principled methods inspires mathematical, statistical, and computational innovations within OT itself.

This workshop will include a poster session; a request for posters will be sent to registered participants in advance of the workshop.



Organizers

Katy Craig

University of California, Santa Barbara (UCSB)

Mikael Kuusela

Carnegie Mellon University

Robert McCann

University of Toronto

Roya Mohayaee

Sorbonne University, LCT

Ravi Sheth

University of Pennsylvania

Jesse Thaler

Massachusetts Institute of Technology

Invited Speakers

Ricardo Baptista (University of Toronto), **Mathias Braun** (EPFL (Ecole Polytechnique Fédérale de Lausanne)), **Annegret Burtscher** (Radboud Universiteit Nijmegen), **Tianji Cai** (Tongji University), **Raffaele Tito D'Agnolo** (Commissariat à l'Énergie Atomique (CEA)), **Rikab Gambhir** (University of Cincinnati), **Wilfrid Gangbo** (University of California, Los Angeles (UCLA)), **Jessica Howard** (University of California, Santa Barbara (UCSB)), **Shayan Hundrieser** (Yale University), **Eun-Ah Kim** (Cornell University), **Matt LeBlanc** (Brown University), **Bruno Levy** (Institut National de Recherche en Informatique et Automatique (INRIA)), **Tudor Manole** (Massachusetts Institute of Technology), **Connor Marrs** (University of California, Santa Barbara (UCSB)), **Gonzalo Mena** (Carnegie Mellon University), **Andrea Mondino** (University of Oxford), **Gigli Nicola** (International School for Advanced Studies (SISSA/ISAS)), **Nikhil Padmanabhan** (Yale University), **Victor Panaretos** (EPFL (Ecole Polytechnique Fédérale de Lausanne)), **Clemens Saemann** (University of Vienna), **Larry Wasserman** (Carnegie Mellon University), **Philipp Windischhofer** (Deutsches Elektronen-Synchrotron (DESY)), **Yunan Yang** (Cornell University)



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For program details and registration:

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