



2021 Project Review

Geo-Mathematical Imaging Group
Rice University · June 15-16

Meeting Agenda

Tuesday, June 15

8:30am	Introduction and overview	de Hoop
9:00am	TRUMPETS: Injective flows for UQ and inverse problems	Kothari
9:30am	Causal inference: Identifying seismic signatures of slow slip events	Seydoux
10:00am	Dynamic, Recurrent Scattering Autoencoder: Unsupervised polyphonic detection, segmentation and classification of seismic signals, and forecasting	Bueno
10:30am	<i>Virtual Coffee Break</i>	
11:00am	Seismic source localization from array data, unknown wave speed, with an injective graph decoder	Jasperson
11:30am	Universal joint manifold and density approximation using injective flows with projection guarantees and applications	Puthawala
12:00pm	Factorial VAE-GAN: End-to-end waveform generation, multiscale segmentation and separation	Balestriero
12:30pm	<i>Virtual Lunch</i>	
1:30pm	Learning unbounded operators	Nelsen
2:00pm	Convolutional sparse coding fast approximation with application to seismic reflectivity estimation	Pereg
2:30pm	Principled Simplicial Neural Networks	Segarra
3:00pm	<i>Virtual Coffee Break</i>	
3:30pm	Three linearized inductive biases of the shallow neural network	Shi
4:00pm	Gradient flows with respect to optimal transport metrics over manifolds	Lyons
4:30pm	<i>Adjourn</i>	

Wednesday, June 16

9:00am	Stable reconstruction of simple Riemannian manifolds from unknown interior sources or seismicity clouds	Saksala
9:30am	Recovery of piecewise smooth density with high-frequency waves	Katsnelson
10:00am	Recovery of relaxation functions for active source surface data	de Hoop
10:30am	<i>Virtual Coffee Break</i>	
11:00am	Coupling of geomechanics, flow and generation of elastic waves in a fractured porous medium	Kumar
11:30am	Consequences of elastic anisotropy through the lens of algebraic geometry	Várilly-Alvarado
12:00pm	Pseudo-elastic <i>PP</i> and <i>PSSP</i> modeling	Ursin
12:30pm	<i>Virtual Lunch</i>	
1:30pm	Advances in the analysis of surface waves: Complex near-surface and inverse problems	de Hoop
2:00pm	Eigenfrequencies: Spectral rigidity with discontinuities	Ilmavirta
2:30pm	Hyperfast rank-structured approximation of some kernel matrices	Xia
3:00pm	<i>Virtual Coffee Break</i>	
3:30pm	Parallel Physics-Informed Neural Networks via domain decomposition	Shukla
4:00pm	SuperDC eigensolver and its application to shifted sparse factorization	Ou
4:30pm	<i>Adjourn</i>	