



Telluride Workshop 2024

**Electronic and Structural Dynamics in Hybrid
Perovskites: Theory Meets Experiment**

September 30th – October 4th

Telluride, Colorado, USA

Telluride Science and Innovation Center

Telluride Science (formally known as the Telluride Science Research Center or TRSC) was founded in 1984 as an interdisciplinary think tank for science and engineering challenges. Telluride Science is about expanding the frontiers of science, exploring new ideas, and building collaborations. Read more about TSRC's history [here](#). The workshop schedule will allow for substantial unstructured time for participants to talk and think. All participants are expected to stay for the entire duration of the workshop. Scientists are encouraged to consider bringing family or friends. Telluride offers several options for children's camps (including Telluride Academy, Aha School for the Arts, and Pinhead Institute). There is more information on childcare, camps, and family activities on TSRC's website. Feel free to contact TSRC's staff to help with any planning and/or coordinating care.

Organizing committee

- Yifan Dong (NREL, Golden, CO), email: yifan.dong@nrel.gov, cell: 720-877-8608
- Aaron Forde (LANL, Los Alamos, NM), email: aaron.a.forde@gmail.com, cell: 715-440-4777

Meeting venue

[Telluride Innovation Center](#), 300 S Townsend St, Telluride, CO 81435

Local TSIC contacts

- Mark Kozak, email: mark@telluridescience.org, cell: 970-708-4426
- Sara Friedberg, email: sara@telluridescience.org, cell: 970-708-0622
- Cindy Fusting, email: cindy@telluridescience.org, cell: 970-708-5069

Food / activities

Grab and go breakfast will be available daily at the workshop location. Lunches and dinners are NOT included in registration. Vouchers for group dinner will be provided on Wednesday evening. Group hike is on Tuesday ([Bear Creek Fall](#)) – this is an excellent opportunity to unwind and get to know each other in a more relaxed setting. Bring comfortable shoes and plenty of water. Altitude at Telluride is ~ 8750 ft so make sure to stay hydrated.

Scientific program

The scientific program starts at 8:45 am on Monday, September 30th and ends at noon on Friday, October 4th. Friday morning will be reserved for group discussions. Each talk is scheduled for 45 minutes including Q&A. Interruptions and questions during talks are encouraged!

Schedule

Meet & Greet / badge pickup: **September 29th 5 pm** at [The Alibi](#) (121 S. Fir Street).

Day 1 September 30 th		
7:30	Breakfast (grab and go)	
8:45	Yifan Dong/Aaron Forde	Welcome remarks
9:00	Matt Beard	Control Spin, Charge and Light with Hybrid Organic-Inorganic Unconventional Semiconductors
9:45	Barry Rand	Halide Phase Separation: Experimental and Theoretical Validation
10:20	Coffee break	
10:50	Lea Nienhaus	Stressing Perovskites with Light and Electric Fields
11:35	Xiwen Gong	Molecular Design Strategies to Stabilize Perovskite Optoelectronic Materials and Devices
12:20	Lunch break (on your own)	
13:30	Mircea Cotlet	Perovskite Interfaces for Information Processing and Optoelectronics
14:15	Lina Quan	Control of Dynamic Structures in Organic Inorganic Hybrid Semiconductors
15:00	Coffee break	
15:30	Volker Blum	Structure, Energy Level Alignment and Spin Properties of Hybrid Perovskites from Large-Scale (Hybrid) DFT
16:15	Milos Dubajic	The Relationship between Local Structural Order and Optoelectronic Performance of Lead Halide Perovskites
17:00	General discussions	
17:30	Dinner (on your own)	

Day 2 October 1 st		
7:30	Breakfast (grab and go)	
9:00	Group hike	
9:45		
10:20		
10:50		
11:35		
12:20	Lunch break (on your own)	
13:30	Nathaniel Gallop	Good and Bad Vibes in Hybrid Perovskites
14:15	Aaron Lindenberg	Probing Atomic-scale Dynamics in the Hybrid Perovskites on Time-Scales from Seconds to Picoseconds
15:00	Coffee break	
15:30	Willa Mihalyi-Koch	Designing Non-Centrosymmetric Hybrid Halide Perovskites for Rashba Physics and Spin-Orbitronics
16:15	David Strubbe	Interplay of Phonons, Excitons, Strain, and Symmetry in 3D and 1D Hybrid Perovskites
17:00	General discussions	
17:30	Dinner (on your own)	

Day 3 October 2 nd		
7:30	Breakfast (grab and go)	
9:00	Aaron M. Schankler	Modeling the role of lattice dynamics in light-matter interactions of perovskites
9:45	Andrew Jones	Utilization of Perovskite Thin Films and Surface Based Resonators for Lasing and Exciton-Polariton Condensation Applications
10:20	Coffee break	
10:50	Eric Bittner	Embracing the Dark Side: Role of Exciton/exciton Scattering Contributions in 2d Perovskite Materials
11:35	Ajay Kandana	Plurality of Excitons in Ruddlesden-Popper Metal Halides - Role of the B-site Metal Cation and the Organic Cation
12:20	Lunch break (on your own)	
13:30	Dali Sun	Hybrid Magnonics in Layered Magnetic Hybrid Perovskites
14:15	Yifan Dong	Detecting Inverse Chirality-Induced Spin Selectivity with Terahertz Emission Spectroscopy
15:00	Coffee break	
15:30	John Colton	Stochastic Charge-Transfer Excitons in 2d Metal Halide Perovskites
16:15	Tao Xu	Photo-Induced Exciton-Localized Spin Interaction in Hybrid Perovskites
17:00	General discussions	
17:30	Group photo and dinner at Oak (voucher will be provided)	

Day 4 October 3 rd		
7:30	Breakfast (grab and go)	
9:00	Small group discussions	
9:45		
10:20		
10:50		
11:35		
12:20	Lunch break (on your own)	
13:30	Yuan Ping	Spin-Optotronic Properties from ab-initio Density-Matrix Dynamics in Solids
14:15	Peijun Guo	Tracking and Making Use of Heat in Two-Dimensional Metal Halide Perovskites
15:00	Coffee break	
15:30	Aaron Forde	Atomistic Perspective on Chirality and Charge-Transfer Excitons in Halide Perovskites
16:15	Farzaneh Jahanbakhshi	Tailoring Interface and Surface Chemistry Toward Stable and Efficient Optoelectronic Materials
17:00	General discussions	
17:30	Dinner (on your own)	

Day 5 October 4 th		
7:30	Breakfast (grab and go)	
9:00-12:00	Collaborative discussions	
12:00	Yifan Dong/Aaron Forde	Concluding remarks

List of participants

Name	Institution	Email
Matt Beard	National Renewable Energy Laboratory	matt.beard@nrel.gov
Eric Bittner	University of Houston	ebittner@central.uh.edu
Volker Blum	Duke University	volker.blum@duke.edu
John Colton	Brigham Young University	john_colton@byu.edu
Mircea Cotlet	Brookhaven National Laboratory	cotlet@bnl.gov
Yifan Dong	National Renewable Energy Laboratory	yifan.dong@nrel.gov
Milos Dubajic	University of Cambridge	md942@cam.ac.uk
Aaron Forde	Los Alamos National Laboratory	aforde@lanl.gov
Nathaniel Potocki Gallop	IFW Dresden	n.p.gallop@ifw-dresden.de
Xiwen Gong	University of Michigan	xwgong@umich.edu
Peijun Guo	Yale University	peijun.guo@yale.edu
Farzaneh Jahanbakhshi	University of Pennsylvania	farjb@sas.upenn.edu
Andrew Jones	Los Alamos National Laboratory	acj@lanl.gov
Aaron Lindenberg	Stanford University	aaronl@stanford.edu
Willa Mihalyi-Koch	University of Wisconsin-Madison	mihalyikoch@wisc.edu
Lea Nienhaus	Rice University	nienhaus@rice.edu
Yuan Ping	University of Wisconsin-Madison	yping3@wisc.edu
Lina Quan	Virginia Tech	linaquan@vt.edu
Barry Rand	Princeton University	brand@princeton.edu
Aaron M Schankler	University of Pennsylvania	ams19@sas.upenn.edu
Ajay Ram Srimath Kandada	Wake Forest University	srimatar@wfu.edu
David Strubbe	University of California, Merced	dstrubbe@ucmerced.edu
Dali Sun	North Carolina State University	dsun4@ncsu.edu
Tao Xu	Northern Illinois University	txu@niu.edu

Code of Conduct

- Treat your fellow participants and Telluride Science staff with consideration and professionalism, respecting diversity of views and opinions.
- Communicate openly with civility for others, critiquing ideas rather than individuals.
- Be mindful of your surroundings and fellow participants. Anyone requested to stop unacceptable behavior is expected to comply immediately. Telluride Science staff may take any action deemed necessary and appropriate, including immediate removal from the meeting without warning or refund.
- Be kind and considerate of people in the Telluride community. You represent Telluride Science when you are in town.

Unacceptable behaviour

Harassment, intimidation, exclusion, or discrimination. Physical or verbal abuse.

Reporting unacceptable behaviour

If you are the target of unacceptable behavior or have witnessed any such behavior, please immediately notify a Telluride Science or the workshop organizer. Alert Telluride Science staff, and 911 if appropriate, if you notice a dangerous situation or someone in distress. Report concerns to report@telluridescience.org. All reports will be treated confidentially and with discretion.

Diversity & Inclusion Statement

Telluride Science values diversity and inclusion and is committed to creating a respectful, equitable, and welcoming environment free from discrimination, exclusion, and harassment for all participants. Telluride Science is known for its collegial workshops that spawn new ideas and collaborations. We encourage the open expression and exchange of ideas, and we are dedicated to strengthening our culture of diverse and inclusive workshops, conferences, and schools. The Telluride Science Board actively works with workshop, conference, and school organizers to promote diversity in all Telluride Science-sponsored events.

Most importantly: Have fun! Be inspired! Make new friends!