

## ZFSP 2024 Workshop Break-out Session:

### Planetary Physics & Materials Physics (Majorca)

Organizers: Pat Kalita, Tom Hartsfield

#### **Day 1      Wednesday      Breakout: Planetary Physics & Materials Physics 08-07-24      (Majorca)**

**duration                              25 min (presentations 20 min + 5 min for questions)**

- |         |         |  |
|---------|---------|--|
| 3:45 PM | 4:10 PM | <b>Jean-Paul Davis, SNL</b><br>"Ramp and Shock-Ramp Capabilities at Z"   |
| 4:10 PM | 4:35 PM | <b>Tom Ao, SNL</b><br>"Update of x-ray diffraction on Z and Thor"  |
| 4:35 PM | 5:00 PM | <b>Ivan Oleynik, USF</b><br>"Phase transformations of carbon at extreme conditions"                                    |
| 5:00 PM | 5:25 PM | <b>Damian Swift, LLNL</b><br>"Everything you didn't want to know about Mach waves and had no intention of ever asking" |

#### **Day 2      Thursday      Special Breakout: Static/Dynamic Compression 08-08-24      Synergies (Majorca)**

Compression processes can be categorized by timescales: static isothermal; sonic - adiabatic reversible (isentropic) and supersonic - adiabatic irreversible (Rankine-Hugoniot). Historically advances in these fields have been interconnected, drawing on discoveries from one another. This interdisciplinary session explores the modern synergies between static and dynamic compression, from pressure standards to phase transitions and EOS design.

- |         |         |   |
|---------|---------|---|
| 1:30 PM | 1:55 PM | <b>Shanti Deemyad, U. of Utah</b><br>"Competitive Structural and Electronic States Under Pressure: Quantum and Classical Effects in Dense Matter."                |
| 1:55 PM | 2:20 PM | <b>Vitali Prakapenka, U. Chicago &amp; GSECARS-APS-ANL</b><br>"Phase stability under static and dynamic compression"  |
| 2:20 PM | 2:45 PM | <b>Harrison Horn, LLNL</b><br>"Reduction of Silicates by Hydrogen at High Pressure-Temperature – Experimental Evidence for the Formation of Hot Wet Sub-Neptunes" |
| 2:45 PM | 3:10 PM | <b>Scott Crockett, LANL</b><br>"An Introduction to Equation of State Modeling Applied to Gold."   |

|         |         |   |
|---------|---------|---|
| 3:10 PM | 3:20 PM | <i>mini break</i>                             |
| 3:20 PM | 4:20 PM | <b>SCCM 2025 Organizing Committee Meeting</b> |
| 4:30 PM | 6:30 PM | <b>Posters</b>                                |

**Day 3**      **Friday**      **Breakout: Planetary Physics & Materials Physics**  
**08-09-24**      **(Majorca)**

|          |          |  |
|----------|----------|--|
| 9:45 AM  | 10:10 AM | <b>Amanda Dumi, SNL</b><br>"An ab initio characterization of liquid oxygen at Z machine-relevant conditions."                        |
| 10:10 AM | 10:35 AM | <b>Martin Preising, U. Rostock</b><br>"Planetary Science at the University of Rostock"   |
| 10:35 AM | 11:00 AM | <b>Meghan Lentz, SNL</b><br>"Characterization of Platinum in Liquid-vapor coexistence"   |
| 11:00 AM | 11:25 AM | <b>Armin Bergermann, U. Rostock</b><br>"First-order liquid-liquid phase transition in dense hydrogen with density functional theory" |

