Summary

Challenges & Building Blocks

- Aluie, Blackman, Boldyrev, Brandenburg, Brun, Calkins, Cambon, Cossette, Daughton, Jenko, Julien, Lesur, King, Matthaeus, Pouquet, Rempel, Stone, Schmidt, Shebalin, Strugarek, Sullivan, Tobias, Uzdensky, Velli, Yokoi

LES Applications & Success Stories

- Augustson, Brun, Cossette, Fan, Kitiashvili, Kosovic, Lesur, Matthaeus, Miura, Nelson, Petrosyan, Pouquet, Rempel, Schmidt, Smolarkiewicz, Stone, Sullivan, Velli

New Directions

- Brandenburg, Brun, Matthaeus, Pouquet, Rast, Schmidt, Sondak, Stone, Vasilyev, Yokoi

Open issues

- **Horror stories - when does ILES/ND not work?**
  - **Warning signs?**
- **What metrics do we use to decide if an LES/SGS model is successful?**
- **Do LES have to model SGS physics? What SGS approaches are most promising (diffusive/self-similar/diagnostic equations)?**
- **What (semi-) universal physics can we exploit?**
  - **self-similarity/local transport? - or scale separation?**
  - **dynamic alignment & small-scale anisotropy?**
  - **helicity constraints?**
  - **current sheets: instability and intermittent dissipation/reconnection?**
  - **small-scale flux amplification & transport in dynamos**

LES-MHD Challenge

- **MRI**
  - **MRI - no guide field - Pm < 1**
  - **Asymptotic Pm >> 1**

- **Solar/stellar convection & dynamos**
  - **Reproduce a “DNS” convective dynamo with a lower-res LES?**
  - **Convergence/sgs sensitivities of cyclic convective dynamos**

- **General**
  - **ILES/ND in shear flows**