

# Big questions and directions in ISM science

**GISM3-Round table 1**

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# The future telescopes and instruments

1. Which future telescope/instruments will bring the most to our field?
2. What telescopes/instruments should we designing?
3. What upgrades should we advocate for in existing telescopes?
4. How should we distribute data storage and processing? Which are the best practices and what have we learned so far about data sharing?

# Numerical simulations

1. We are reaching the limit of what our codes can do. How do we build new, efficient and scalable codes?
2. How to bridge scales? The dynamical range of a code is, by construction, limited. How do we bridge small-scale, detailed simulations with more physics to larger-scale simulations? What are possible side effects to watch for in this process? Specific examples: star formation, feedback, B-fields, turbulence that can impact multiple scales.
3. Is the use of subgrid physics affecting our capacity to reproduce observations (or to agree between codes)?
4. What new areas of research will become accessible with numerical simulation in the next years?

# Data analysis

## How do we make the most of our data?

1. With enormous amounts of data produced every minute, the new generation of telescopes demands an automatic selection of the most “interesting” bits. How do we make sure that unusual or surprising features are maintained?
2. How do we use existing data to select the next relevant observations?
3. How do we learn from the noise and foregrounds?
4. How do we make the most of our numerical simulations in this process?