

# The Challenges Ahead: V2 ...

<https://events.ph.ed.ac.uk/star-formation/open-forum->

Let thank the organizers for this wonderful meeting !

Special thanks to everybody for sending their “Challenges” ...  
and for those who summarized the Tuesday  
group discussions.

## CURRENT PROBLEMS & CHALLENGES for the FUTURE ...

- **IMF**, IMF, IMF, ... IMF, IMF, ... (Ethan Hawk "Impossible Mission Force") ....  
CMF => IMF ? Are CMFs & IMFs universal? .. at high-z ?  
Mass-spectrum: stars => planets ... evolution over cosmic time?
- Converging flows and collapse: clouds => sheets => filaments => clumps => stars  
triggering?  $V_r$ ,  $V_{PM}$ , ages Filaments by erosion? 0.1 pc width? Why?
- GMCs bound? unbound? On what scale?
- The role of B from IGM => ISM => clouds => stars: fossil-B vs. dynamos
- What controls the SFE and SFR: Gravity  $\Leftrightarrow$  Feedback  $\Leftrightarrow$  Pressure  $\Leftrightarrow$  dynamics?
- Clustering & multiplicity: Impact on IMF, massive star formation?
- What conditions lead to clusters (globular, open) vs. associations?
- What do astro-chemical observations tell us about star & planet formation?
- Mapping the "ecology of star formation and the ISM"  
Matter flows from IGM, galaxies, arms, clouds, clumps cores, stars, ... and back
- Quantifying feedback impacts: outflows, UV, winds, SNe, superbubble, BHs....  
As function of environment. Pressure, metallicity, and scale (< 1pc to > 1kpc) ...
- Transients & time-domain (multi-wave photometry, spectroscopy)
- Funding (can we afford more >10<sup>9</sup> \$ projects?): Beyond JWST, ALMA. VLT. SKA...
- Too much data / too few brains ...resolving degeneracies ... communication .....
- Multi-wavelength /multi-messenger astronomy (EM, GW, neutrinos, ...)  
massive stars / binaries / clusters => BHs, NSs => mergers
- Exo-planet architectures & Life beyond Earth?

# Galactic Ecology: Star Formation & the Interstellar Medium



