



4MOST – 4m Multi-Object Spectroscopic Telescope

Filamendid ja 4MOST

4MOST — next generation spectroscopic survey

Elmo Tempel (UT Tartu Observatory)

8. August 2022

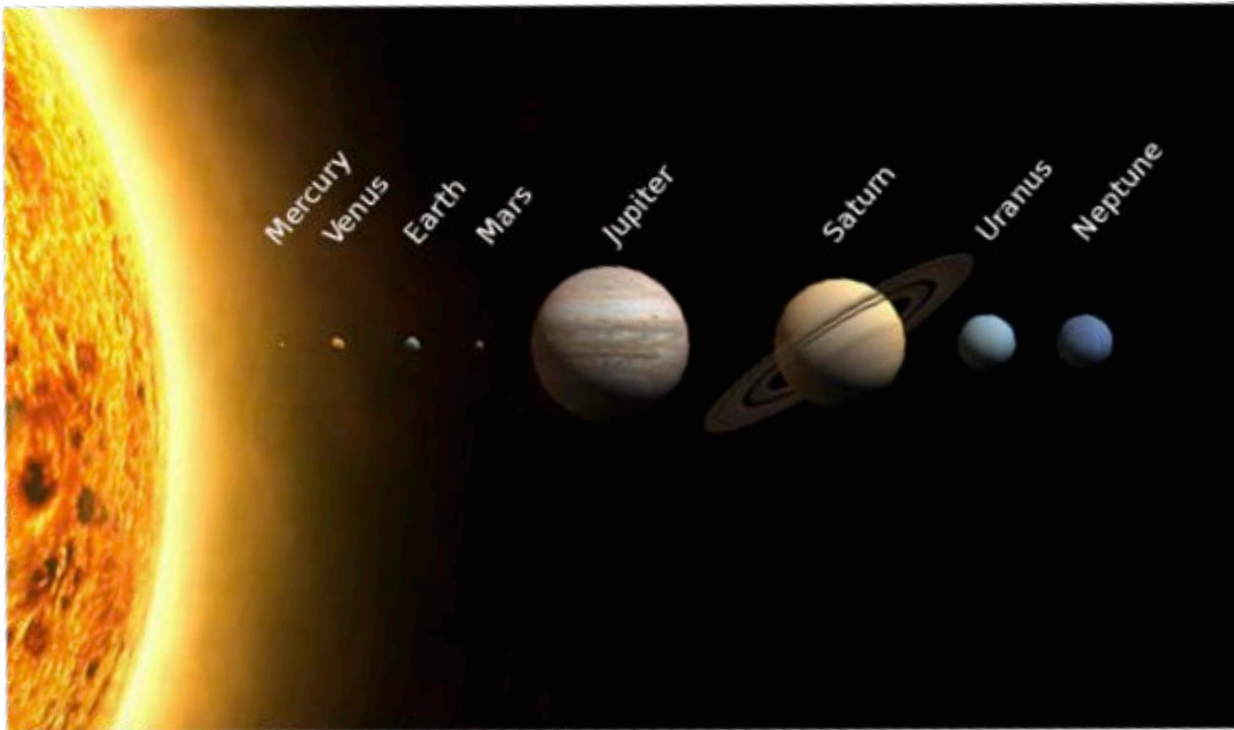
www.4MOST.eu



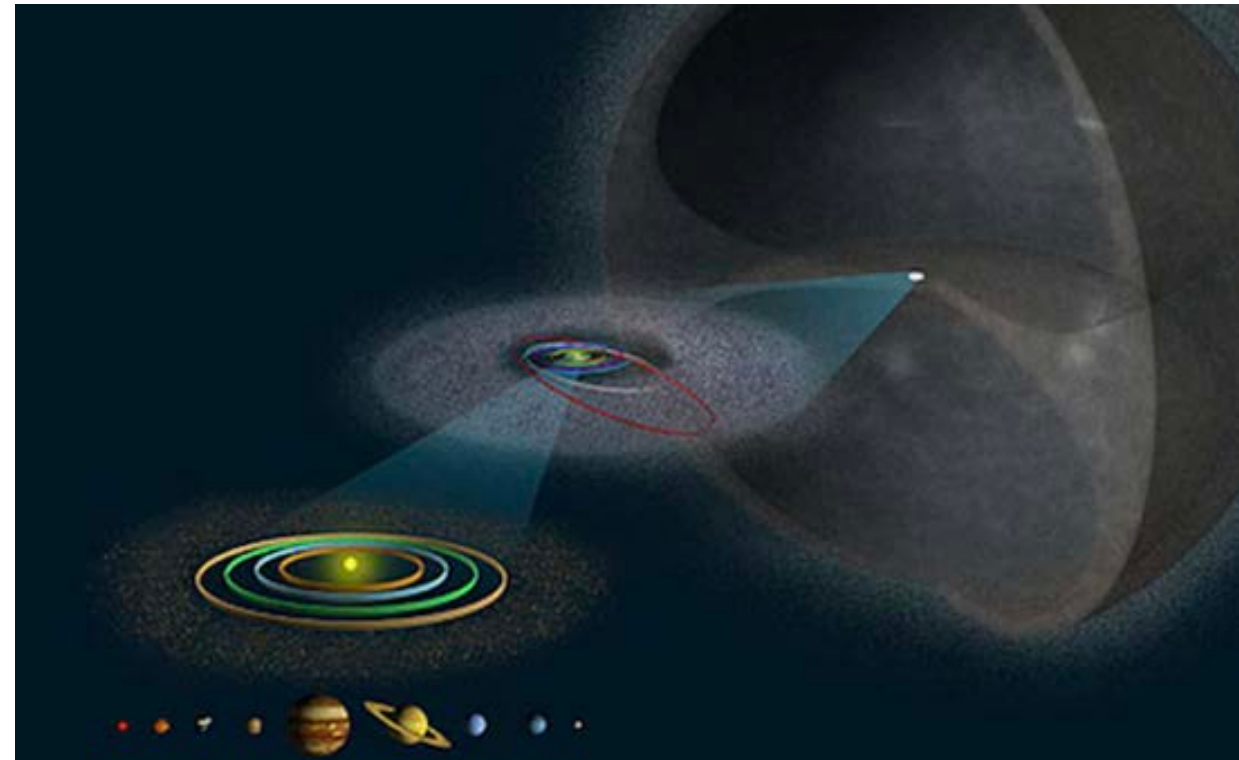
Our Solar system



TARTU ÜLIKOOL



Allikas: NASA illustratsioon Päikesesüsteemist



Illustratsioon: Gemma Lavender

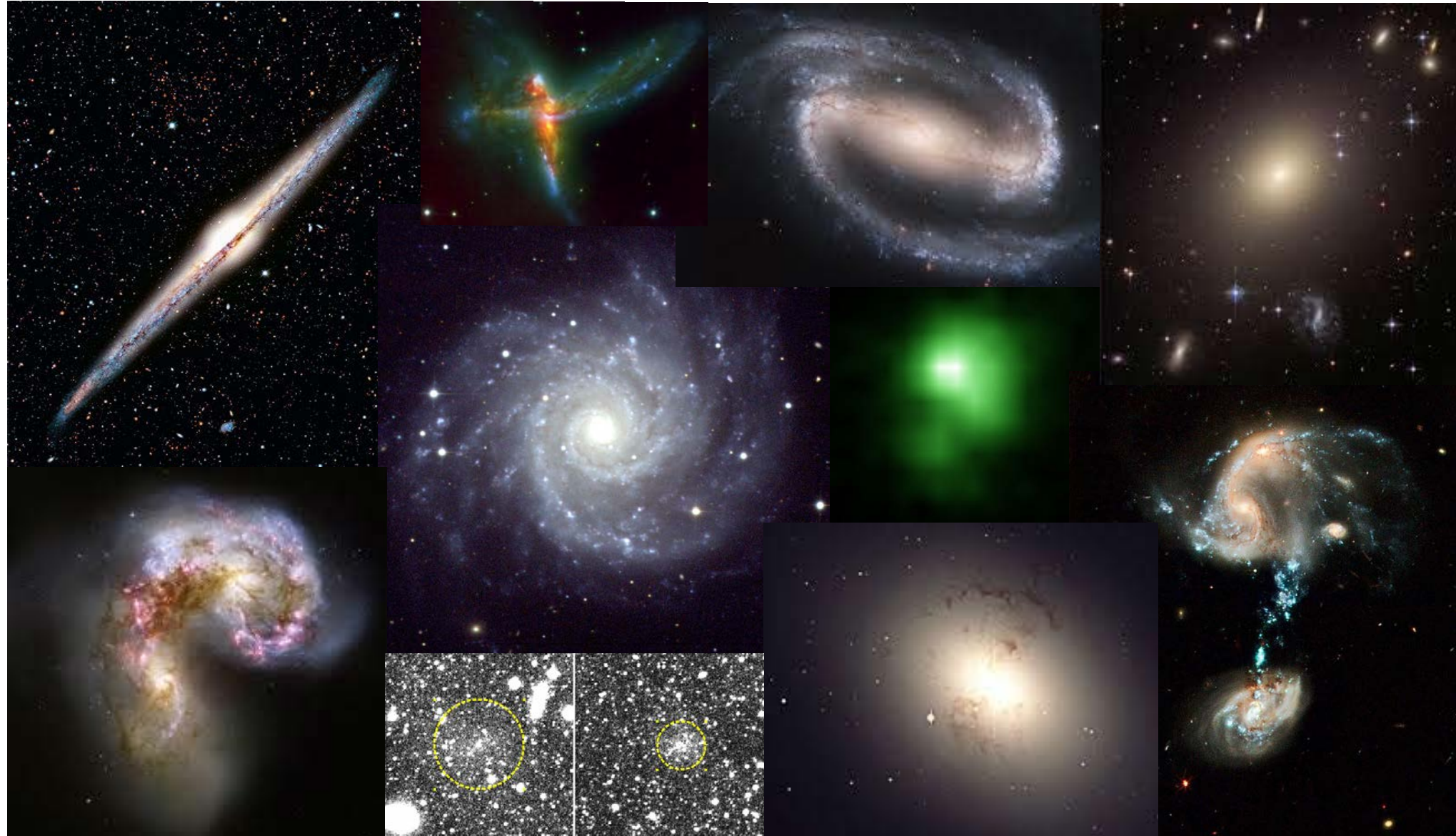
Universe with naked eye



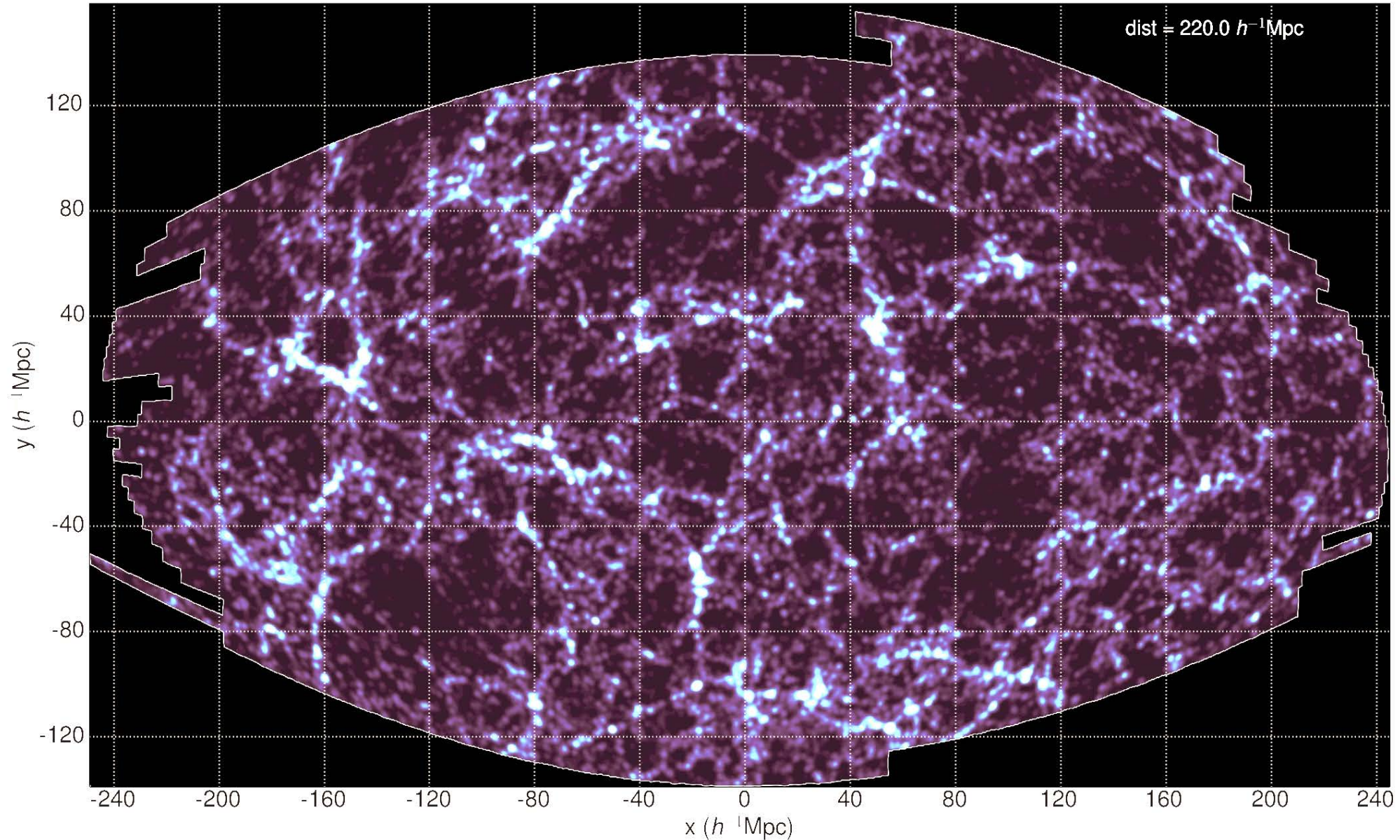
Allikas: Chris Cook Photography



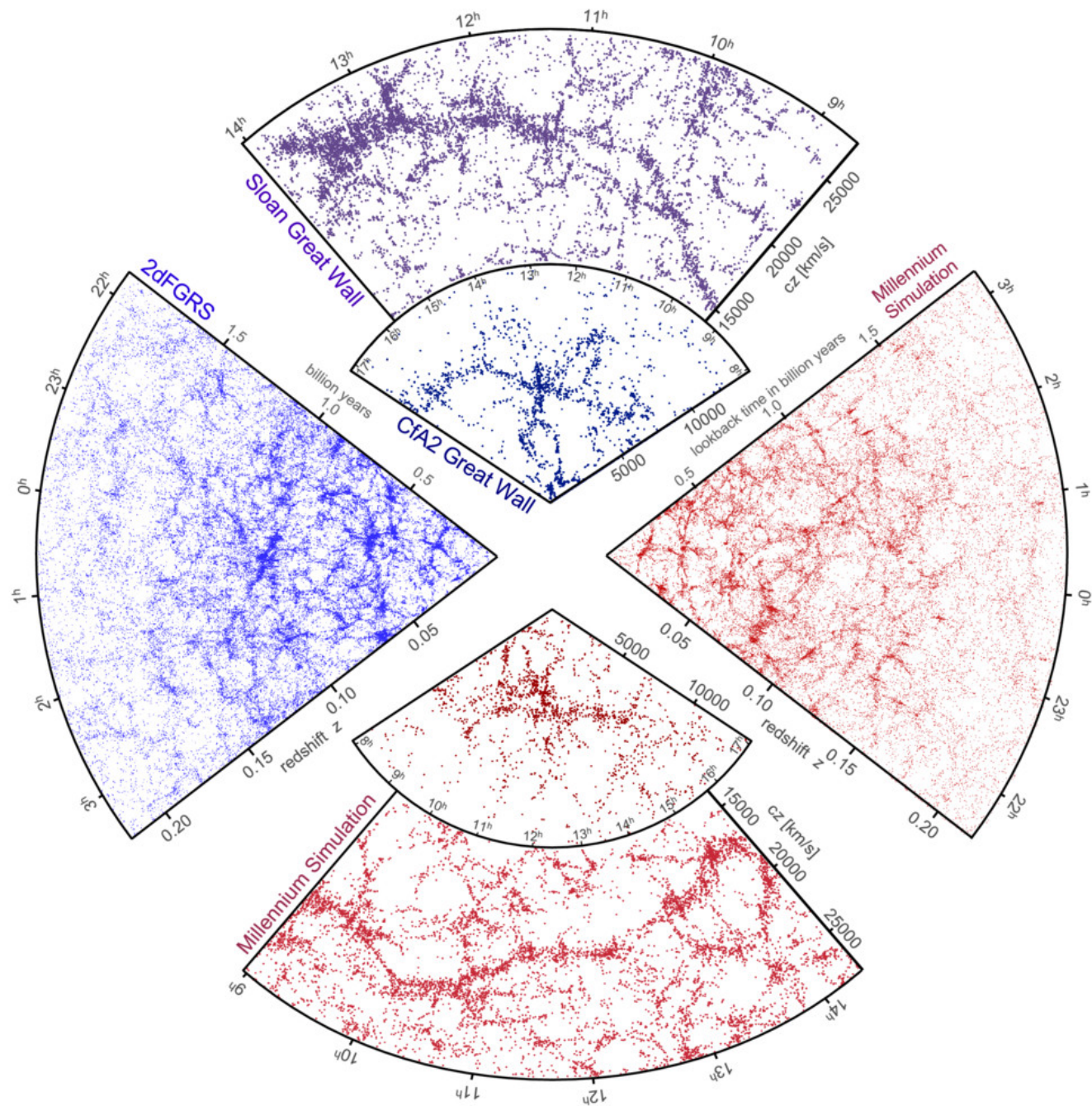
Galaxy zoo



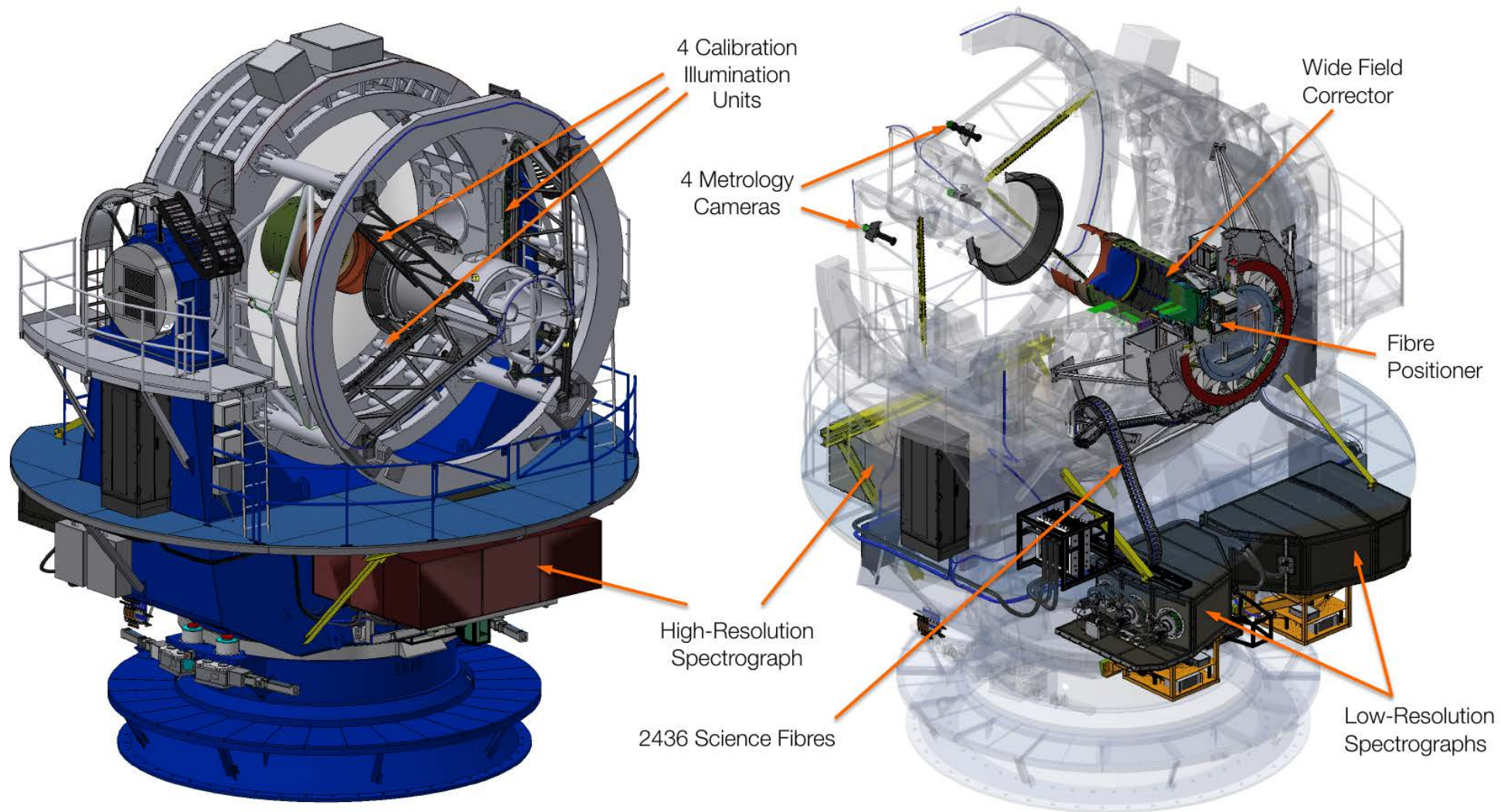
Galaktikate jaotus universumis



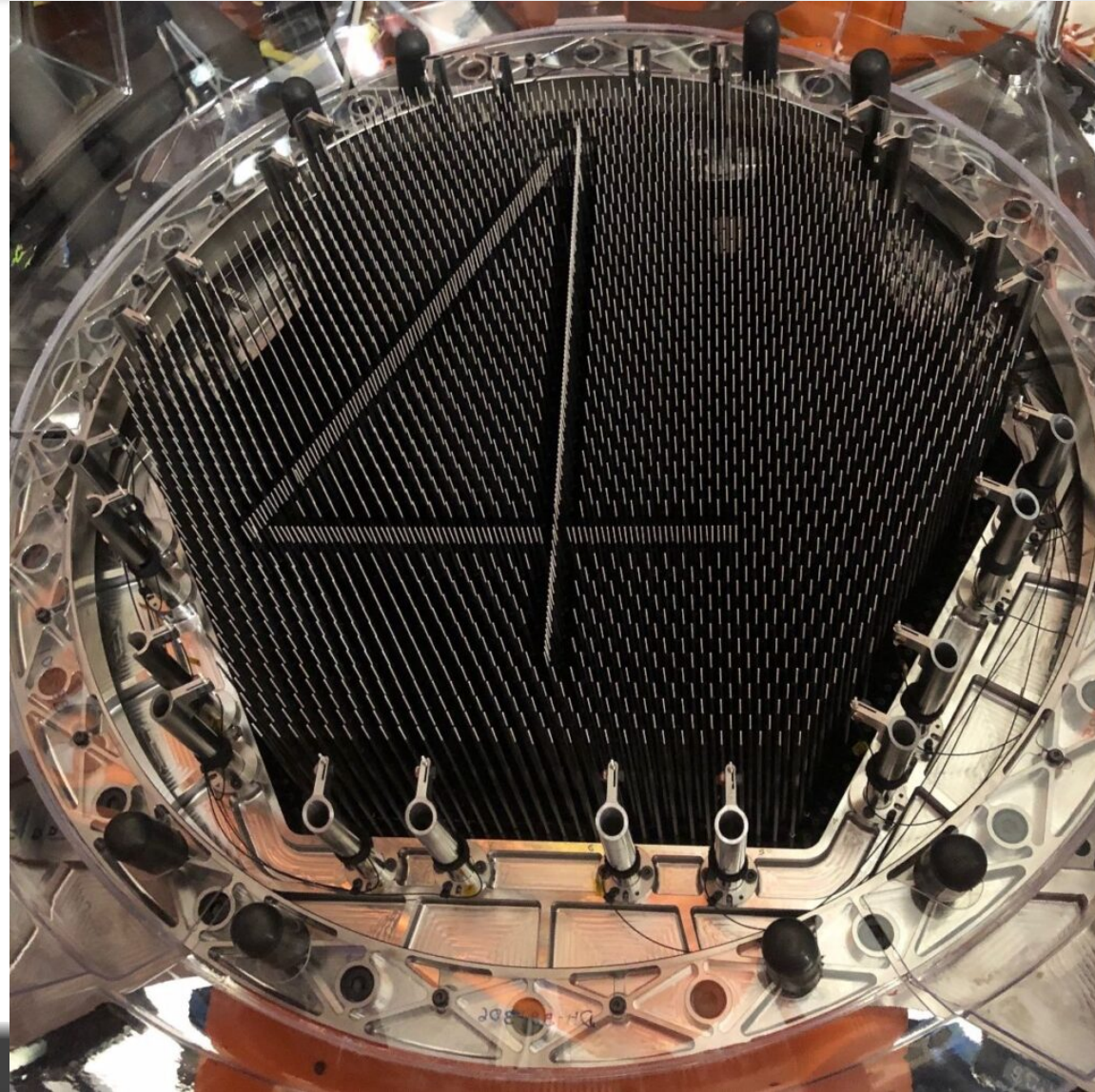
Universum – vaatlused ja mudel



4MOST - 4-metre Multi-Object Spectroscopic Telescope



4MOST - 4-metre Multi-Object Spectroscopic Telescope



4MOST Scientific program



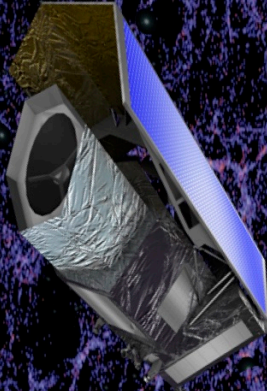
Galactic Archeology
Gaia complement



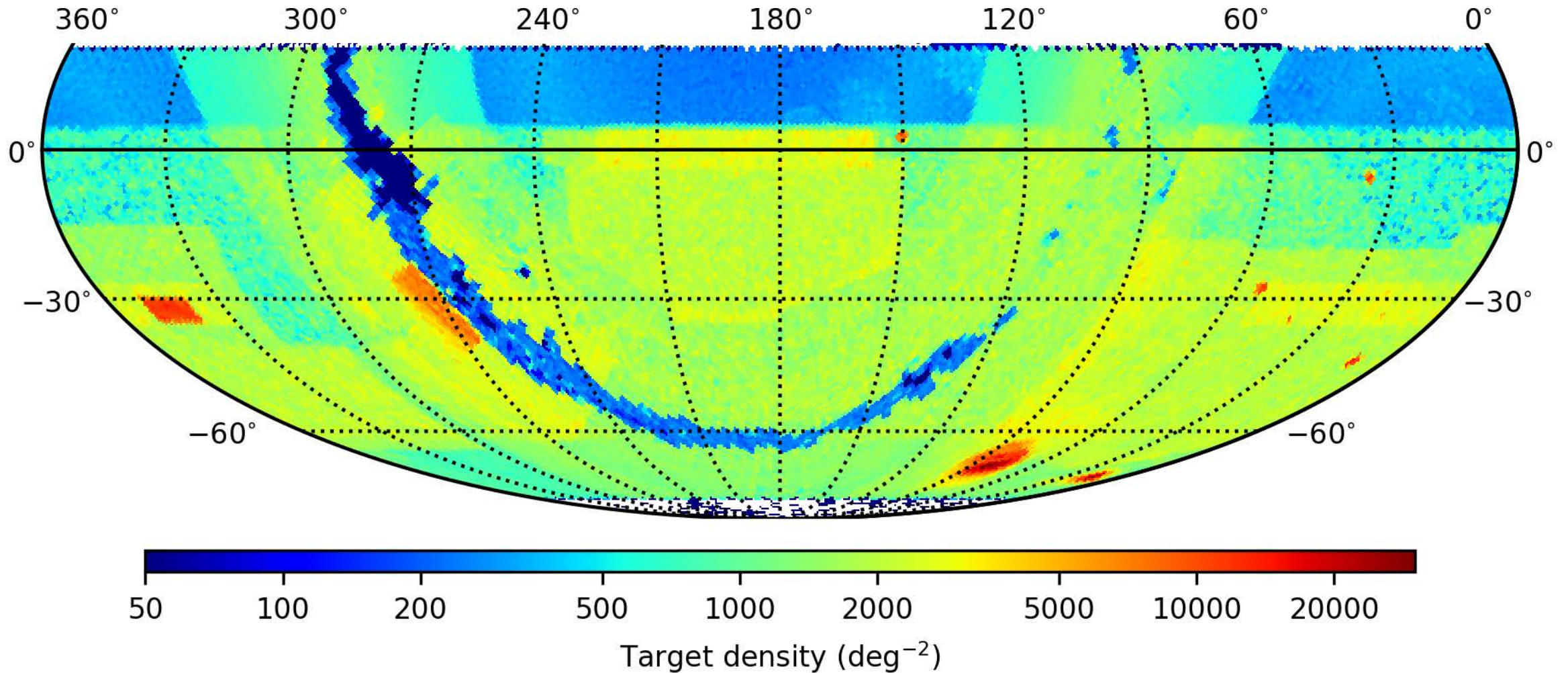
High-energy sky
eROSITA complement



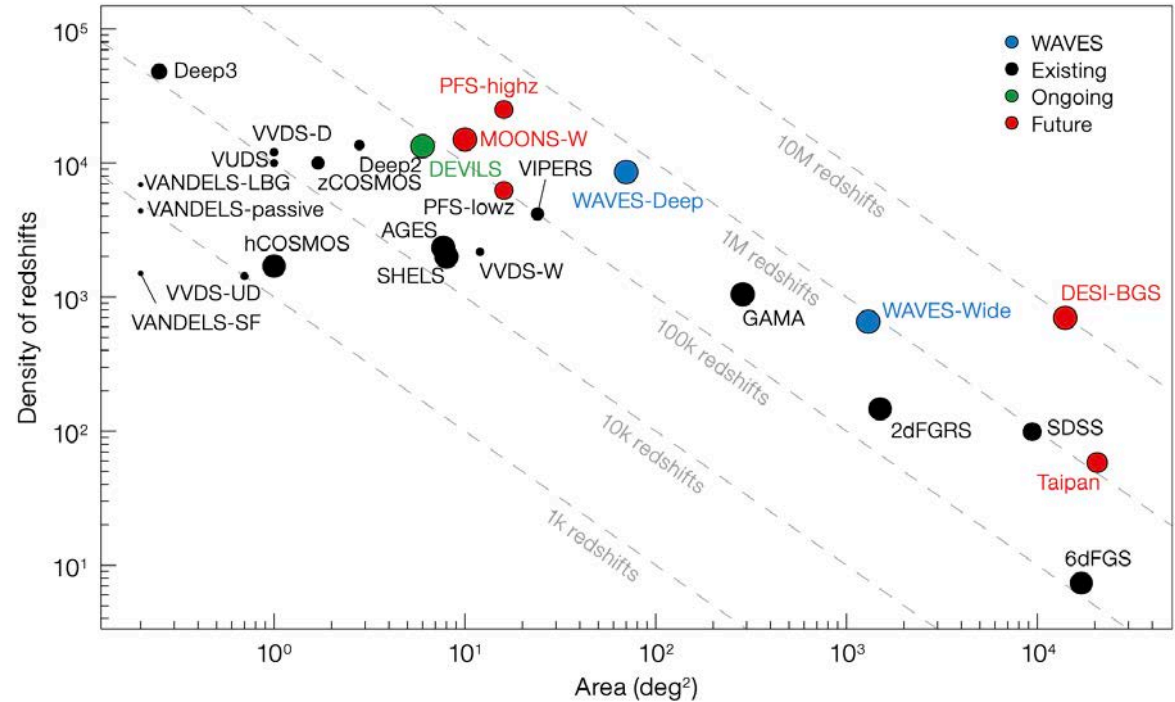
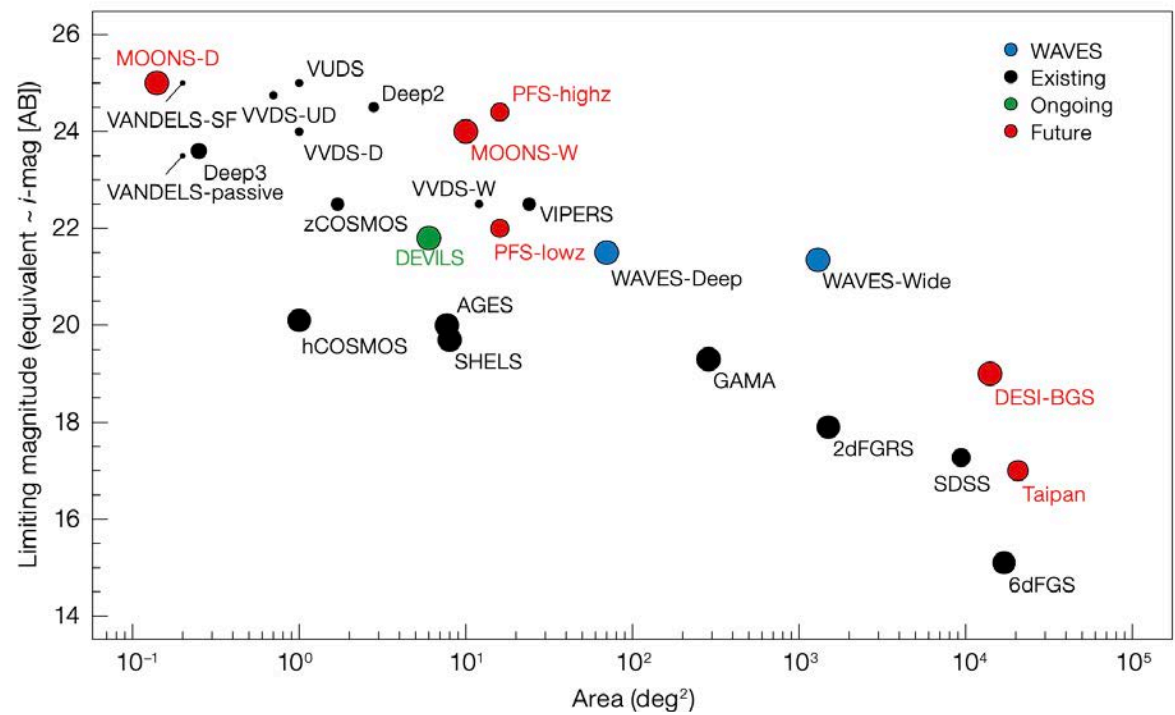
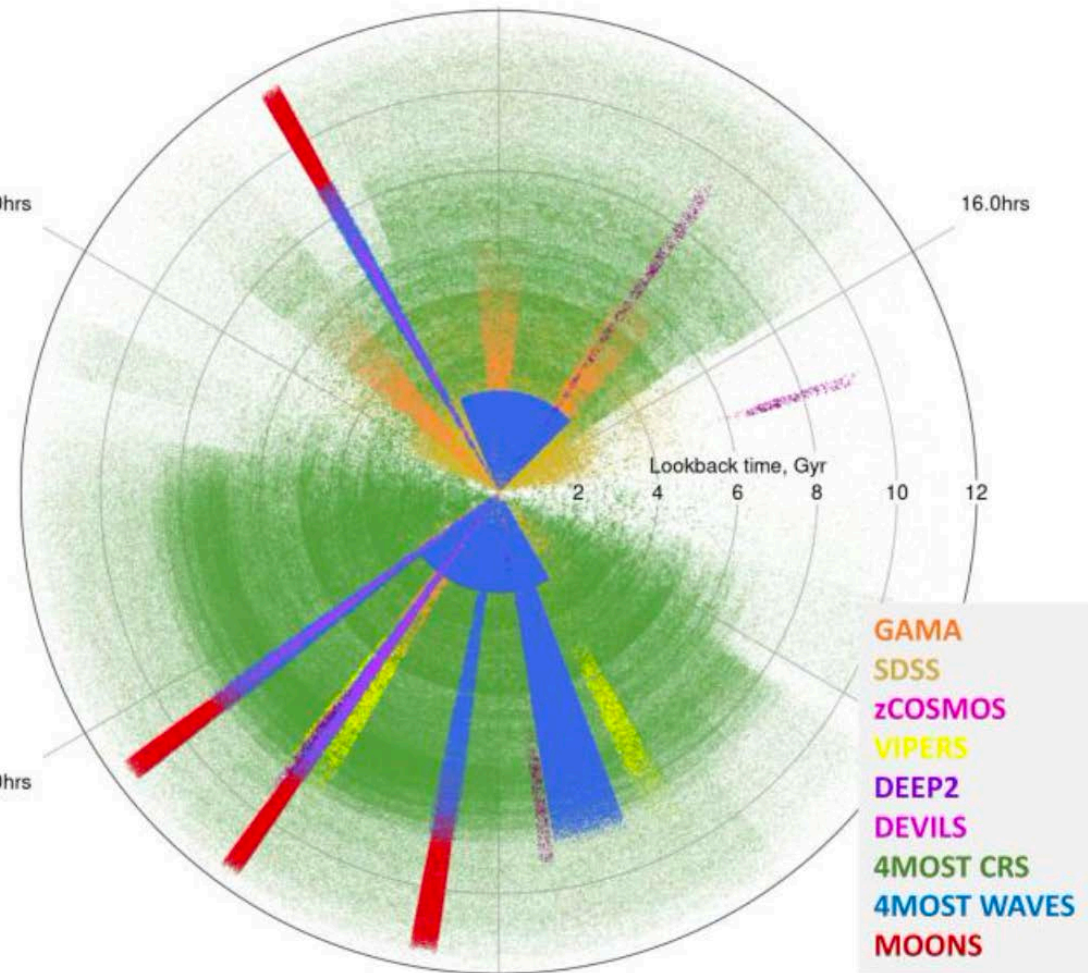
Cosmology and galaxy evolution
Euclid complement
LSST/SKA/Etc.



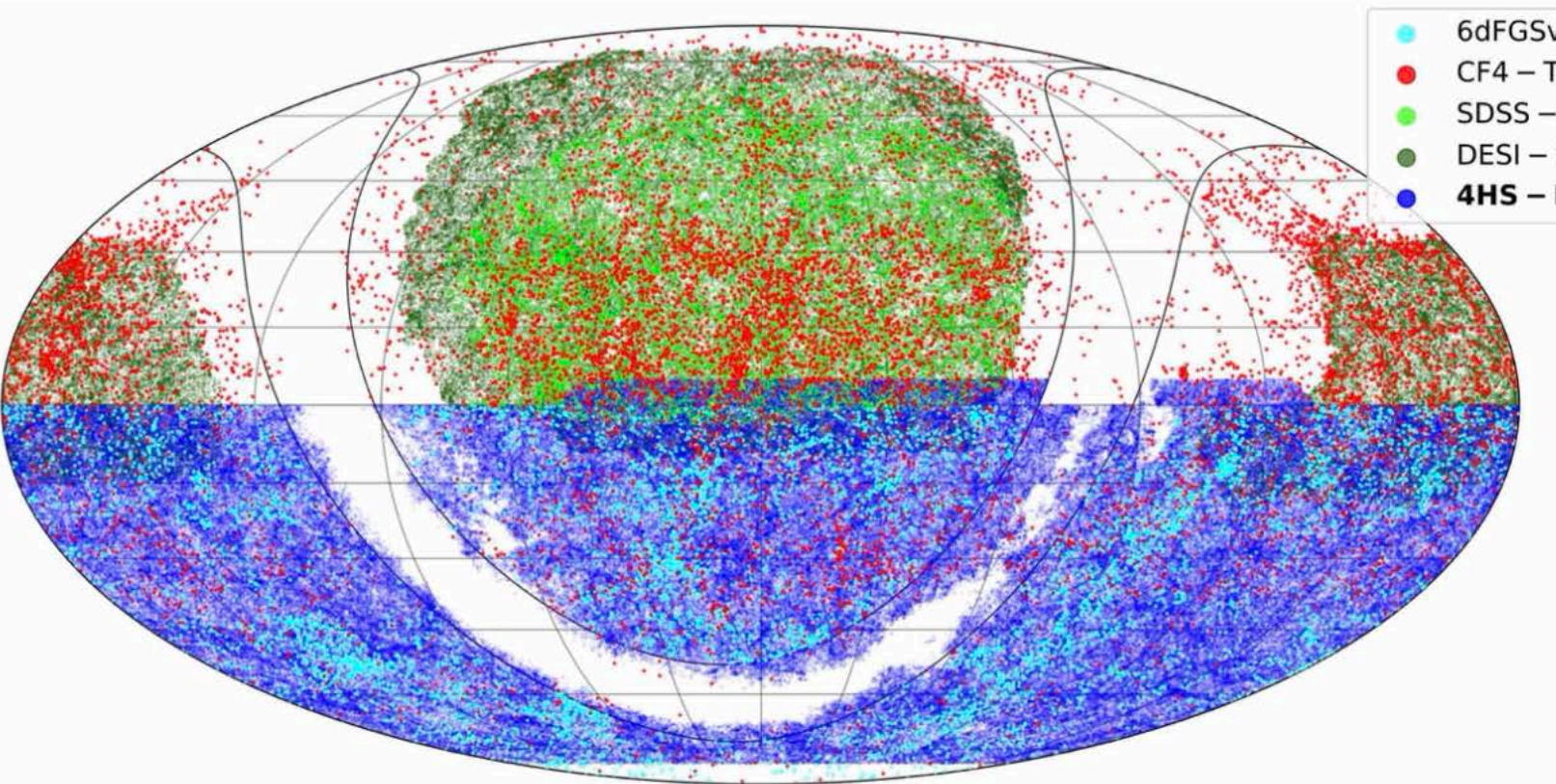
Target density in the sky



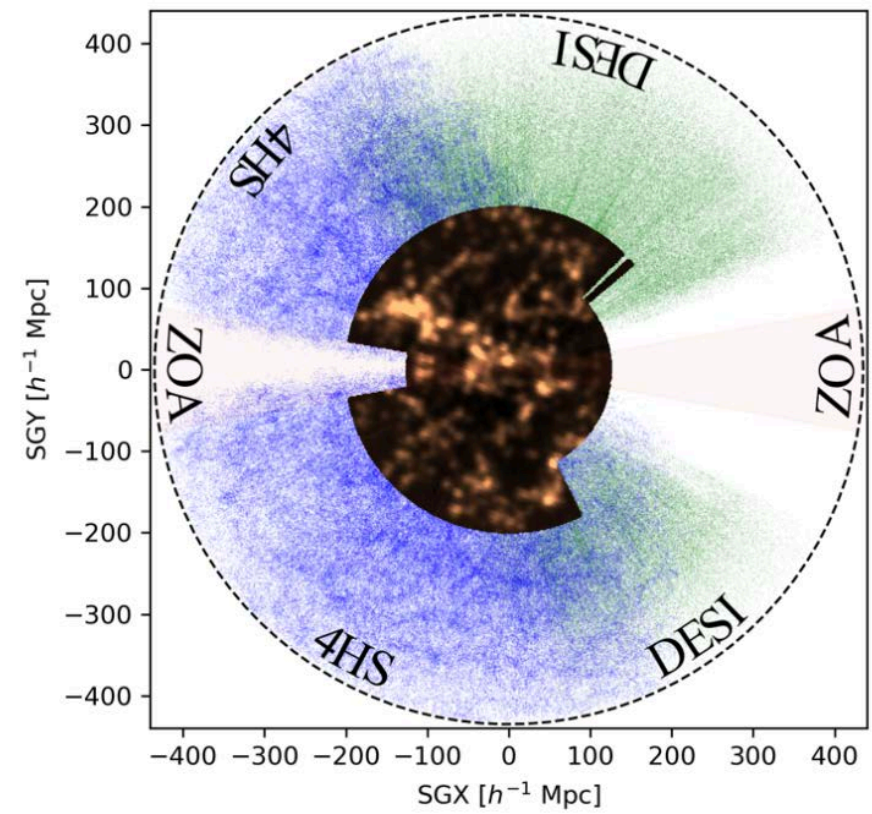
WAVES



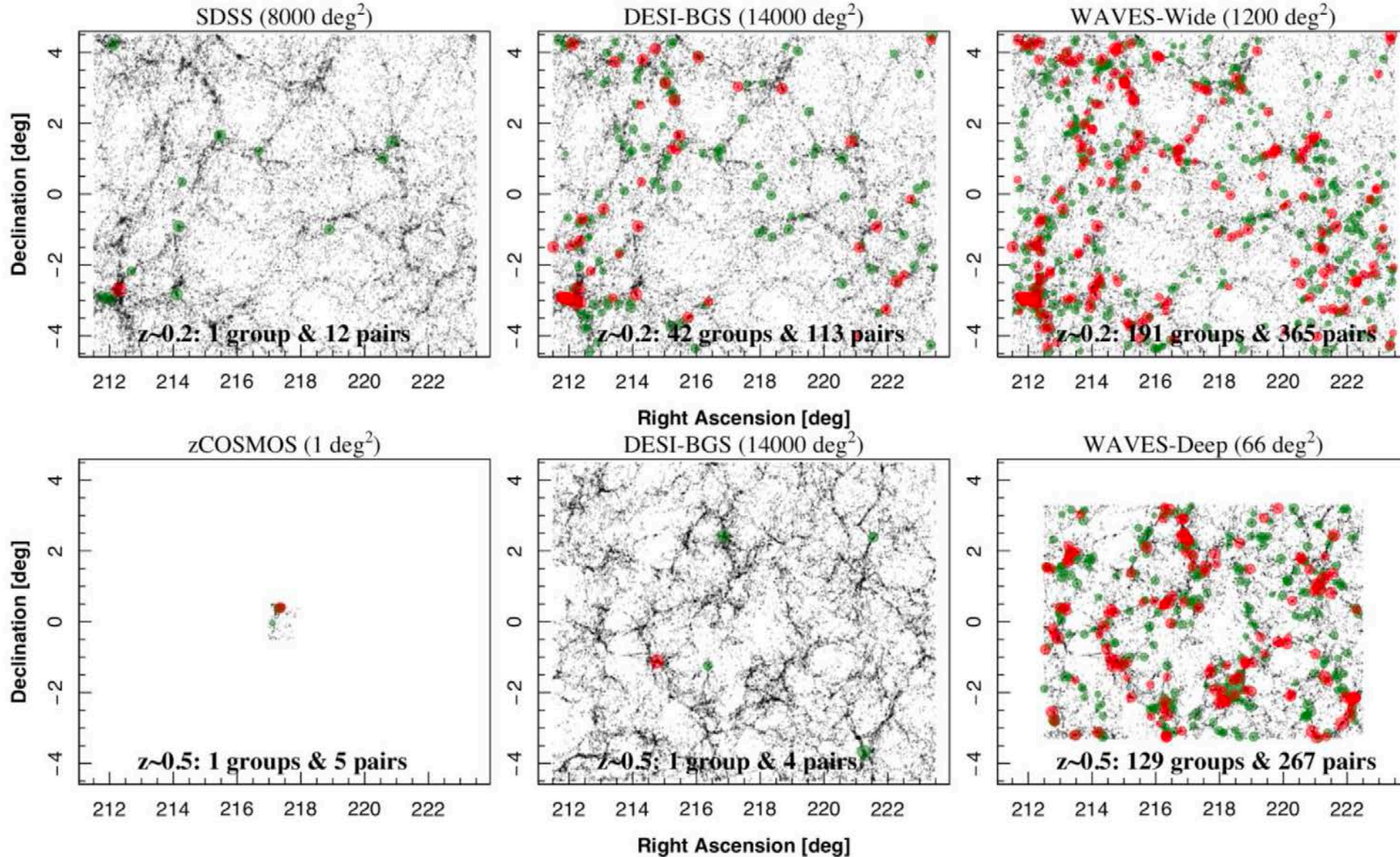
4HS: The 4MOST Hemisphere Survey of the Nearby Universe



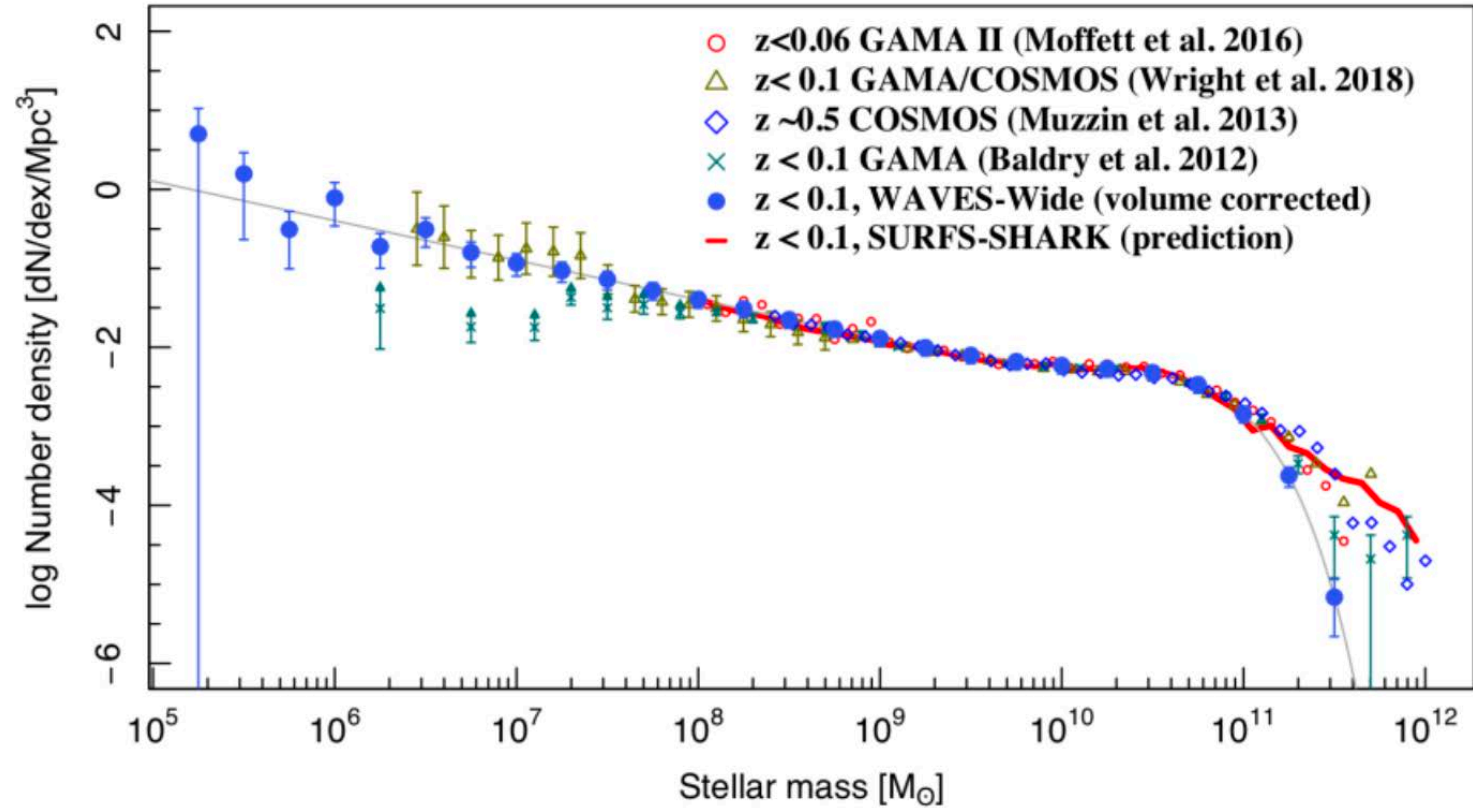
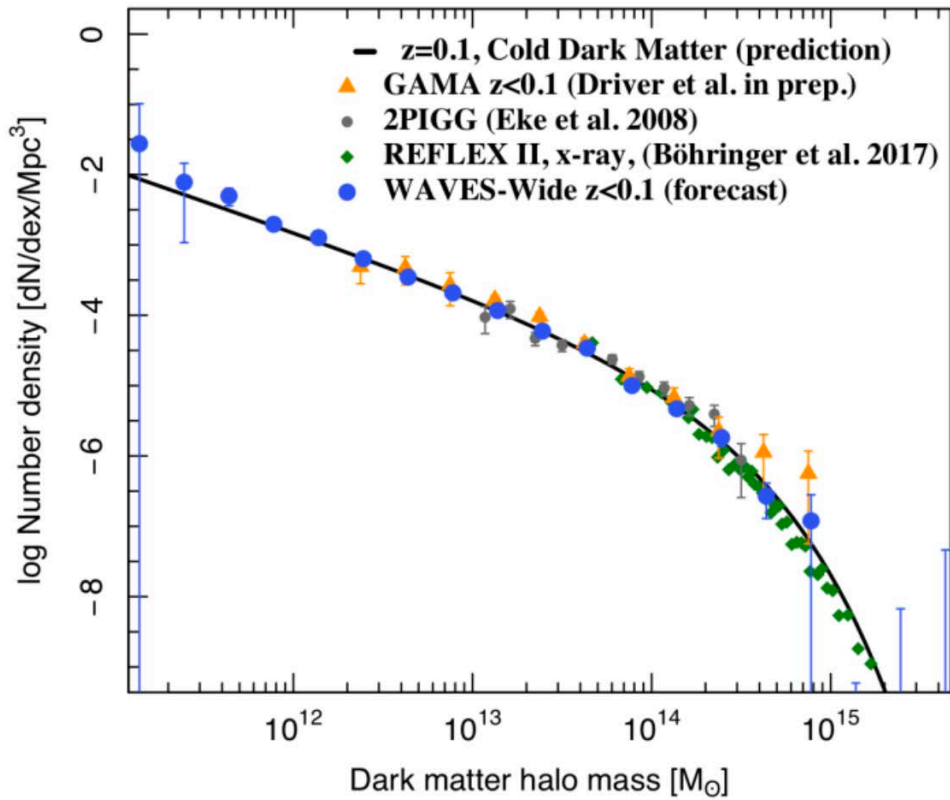
- 6dFGSv (Springob+14) : $N = 8,885$
- CF4 – TF (Kourkchi+20) : $N = 9,789$
- SDSS – PV (In prep.) : $N \approx 30,000$
- DESI – PV (Proposed) : $N \approx 220,000$
- 4HS – PV : $N \approx 500,000$**



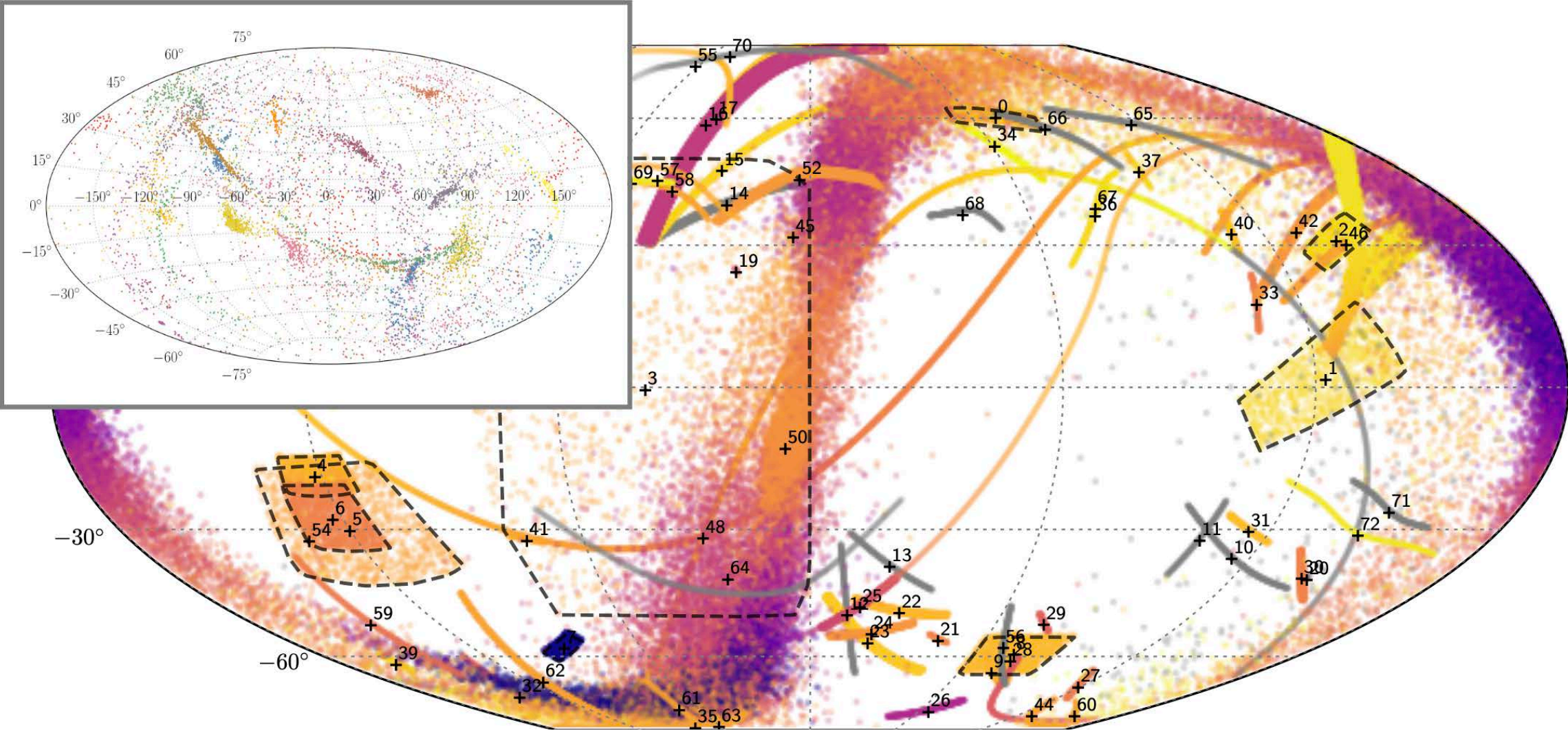
WAVES



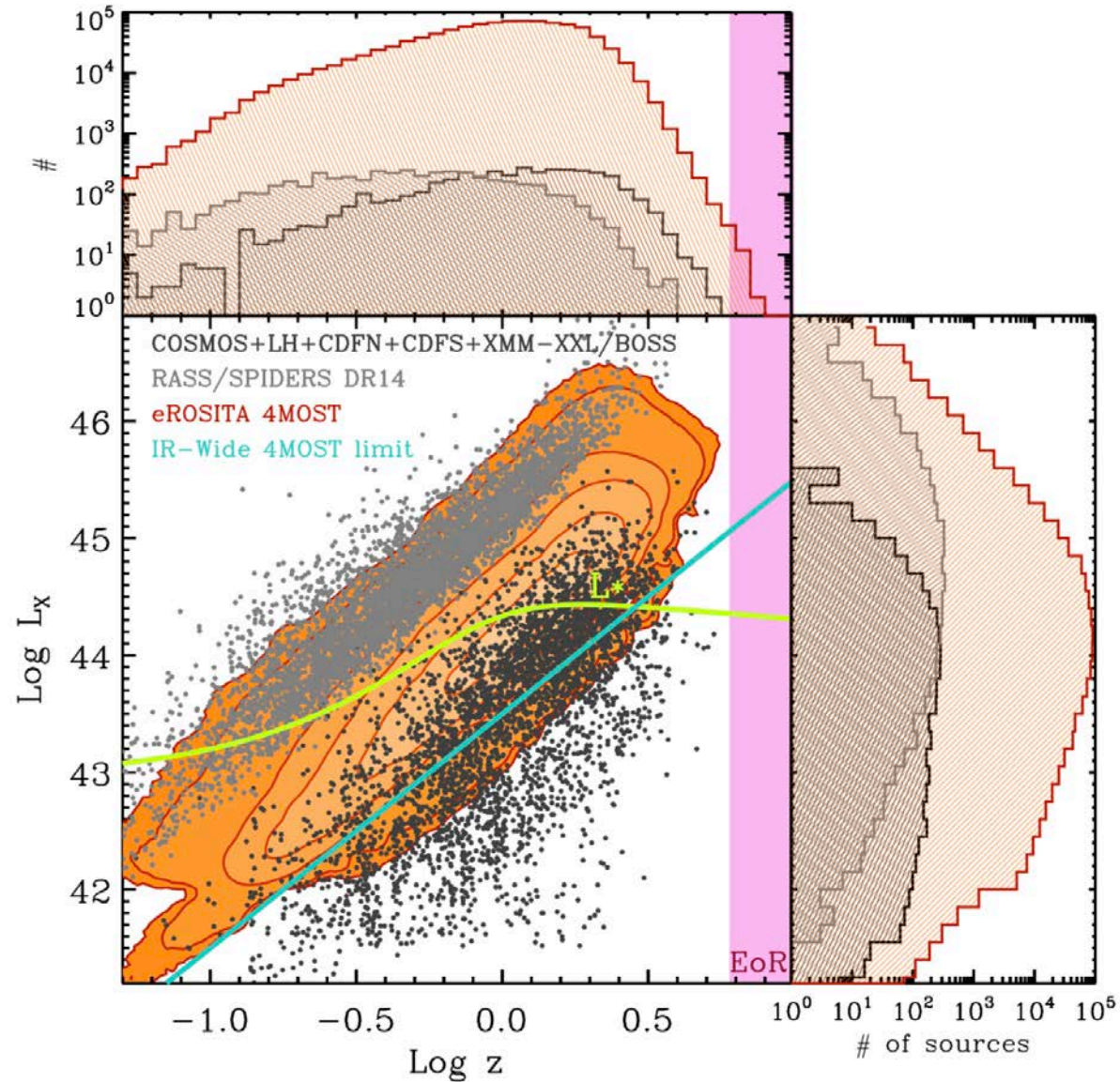
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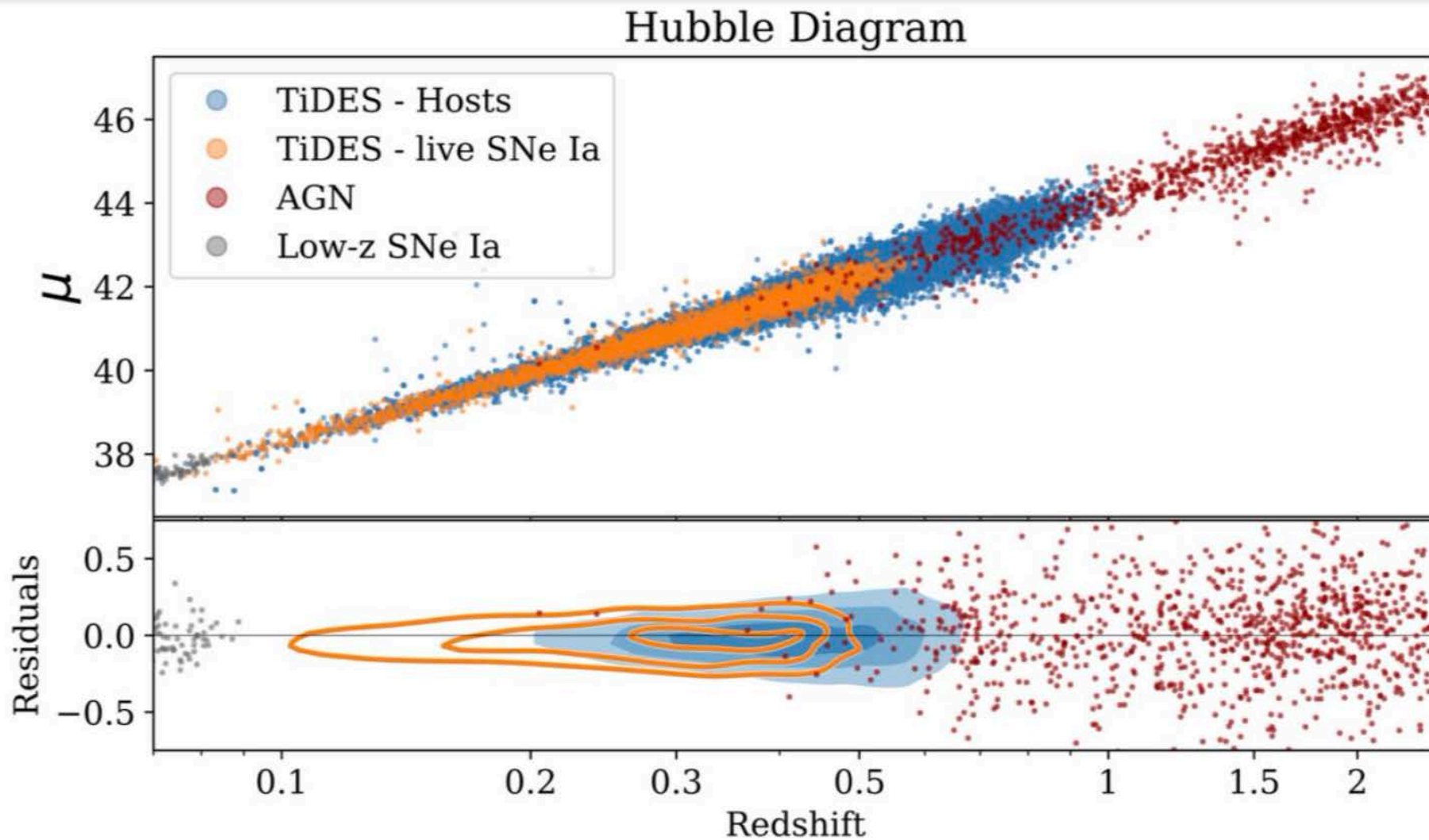
Stellar streams in Milky Way halo



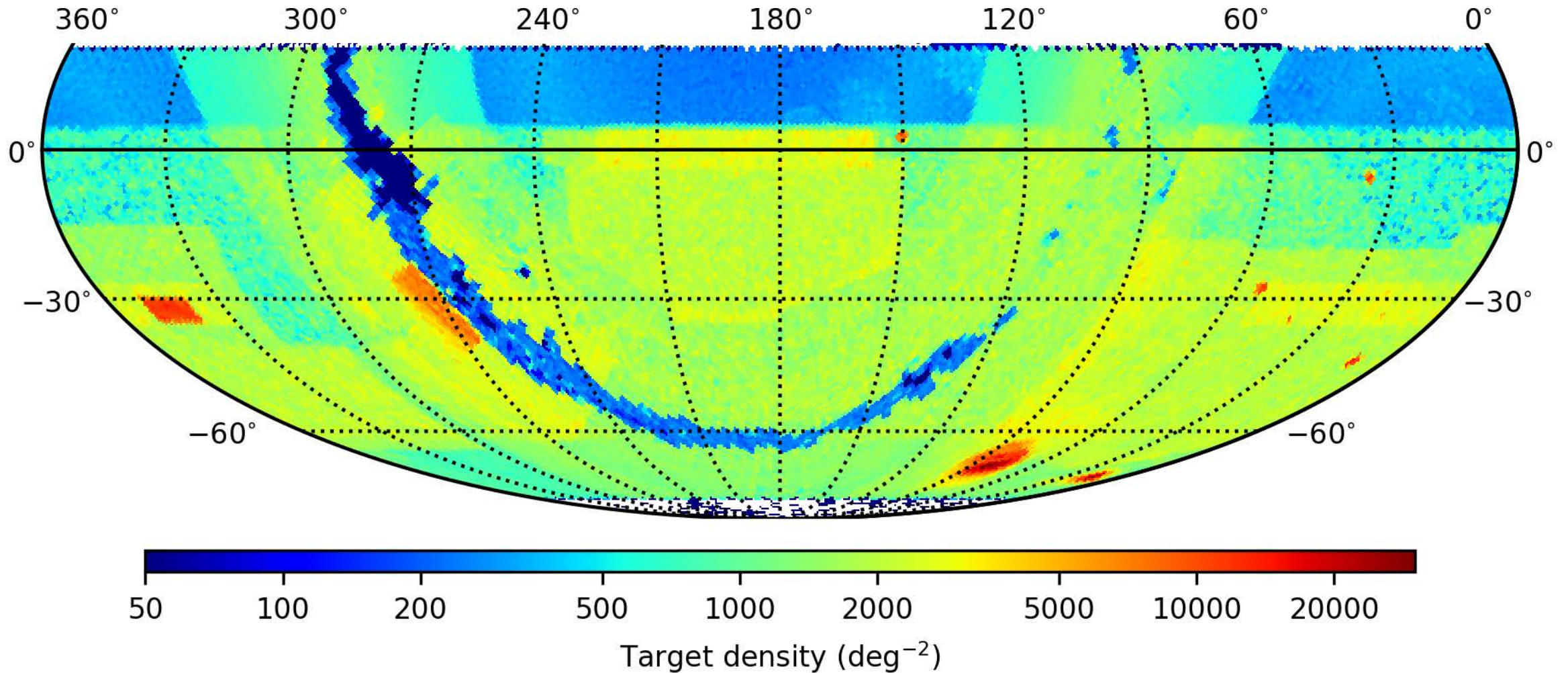
eROSITA AGN survey



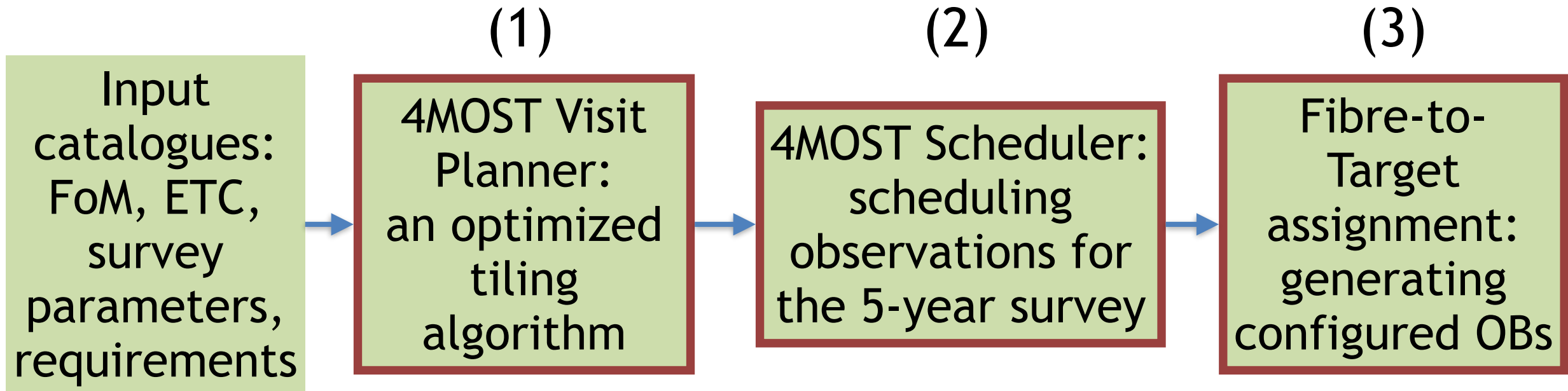
TiDES supernovae



Target density in the sky



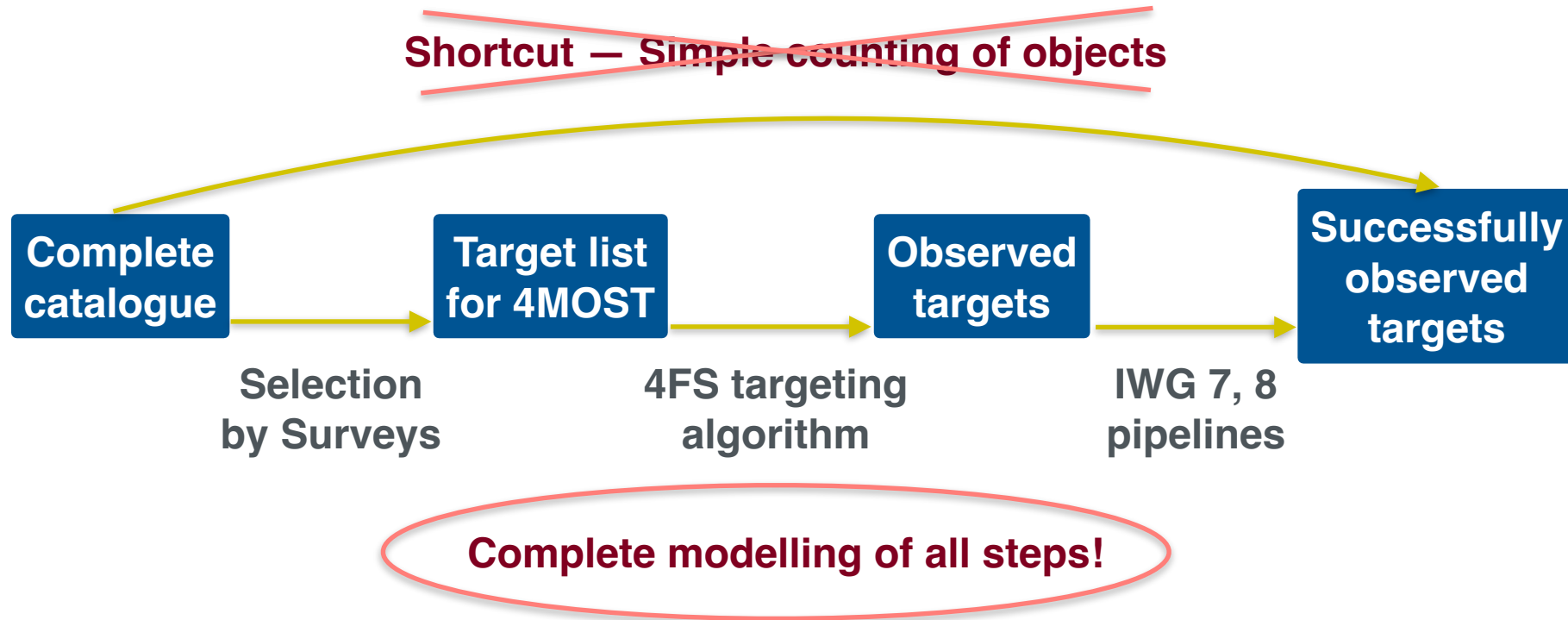
Preparing observations: a general flow-chart



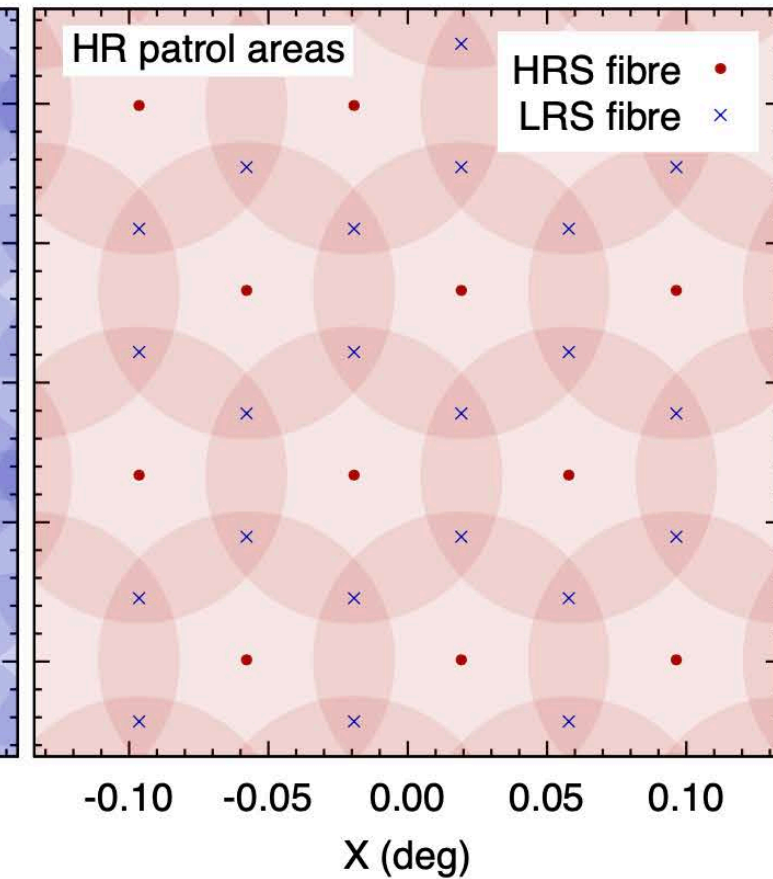
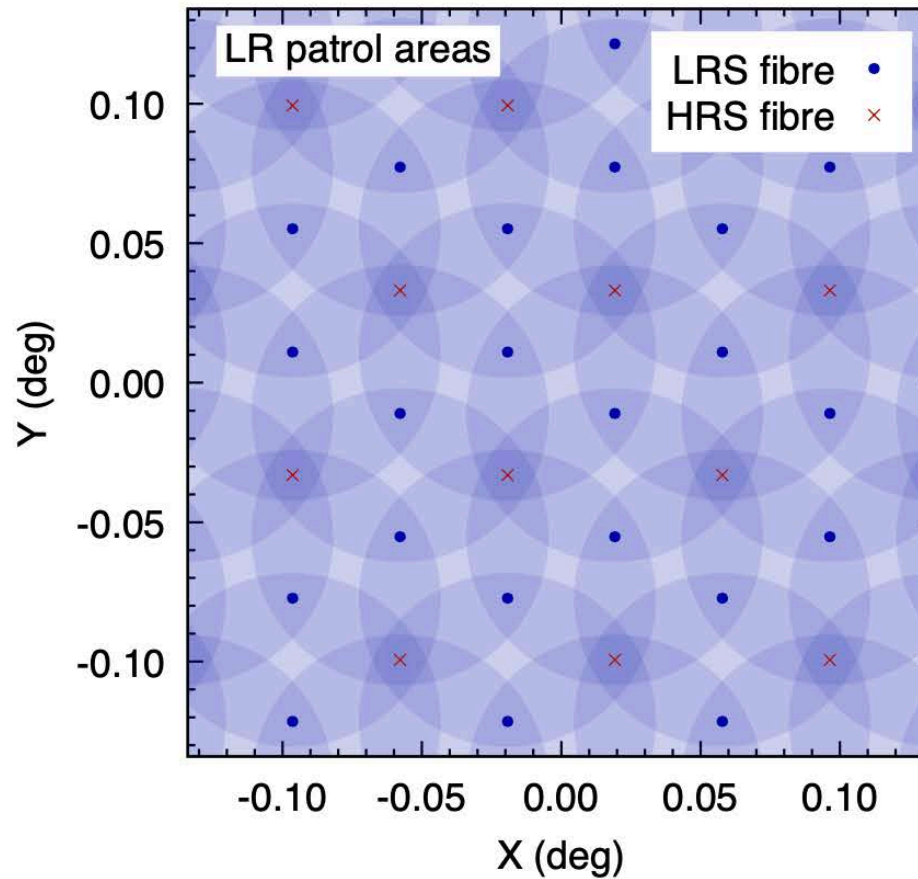
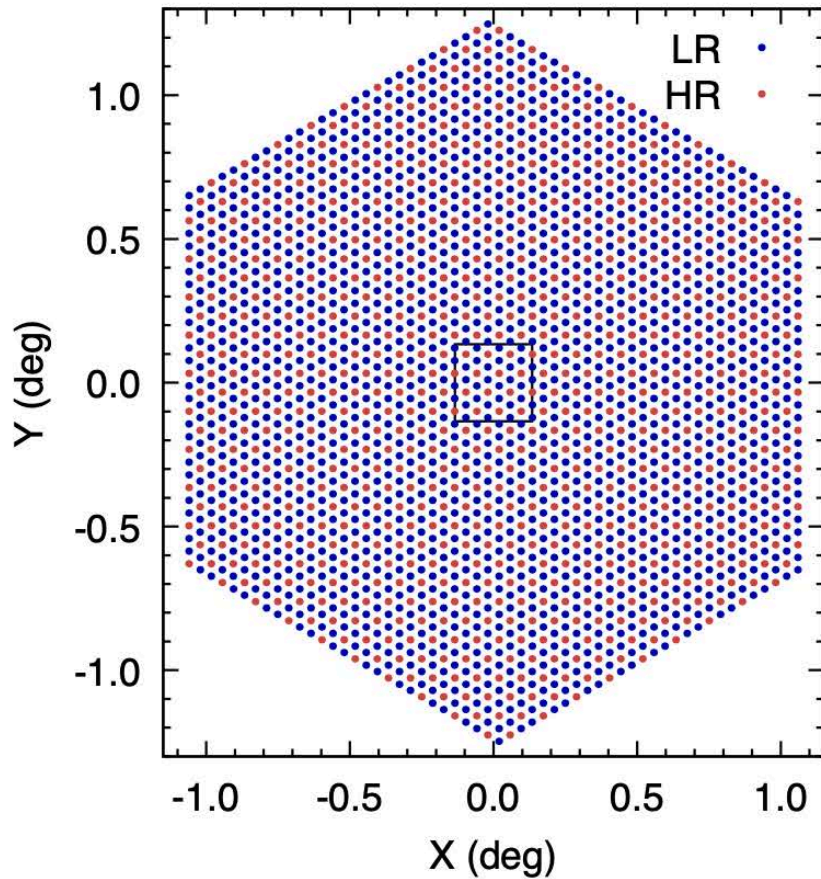
(1) Tempel et al. (2020) “An optimised tiling pattern for multi-object spectroscopic surveys: application to the 4MOST survey”, MNRAS, 497, 4626 (arXiv:2007.03307)

(3) Tempel et al. (2020) “Probabilistic fibre-to-target assignment algorithm for multi-object spectroscopic surveys”, A&A, 635, A101 (arXiv:2001.09348)

From complete catalogue to observed targets



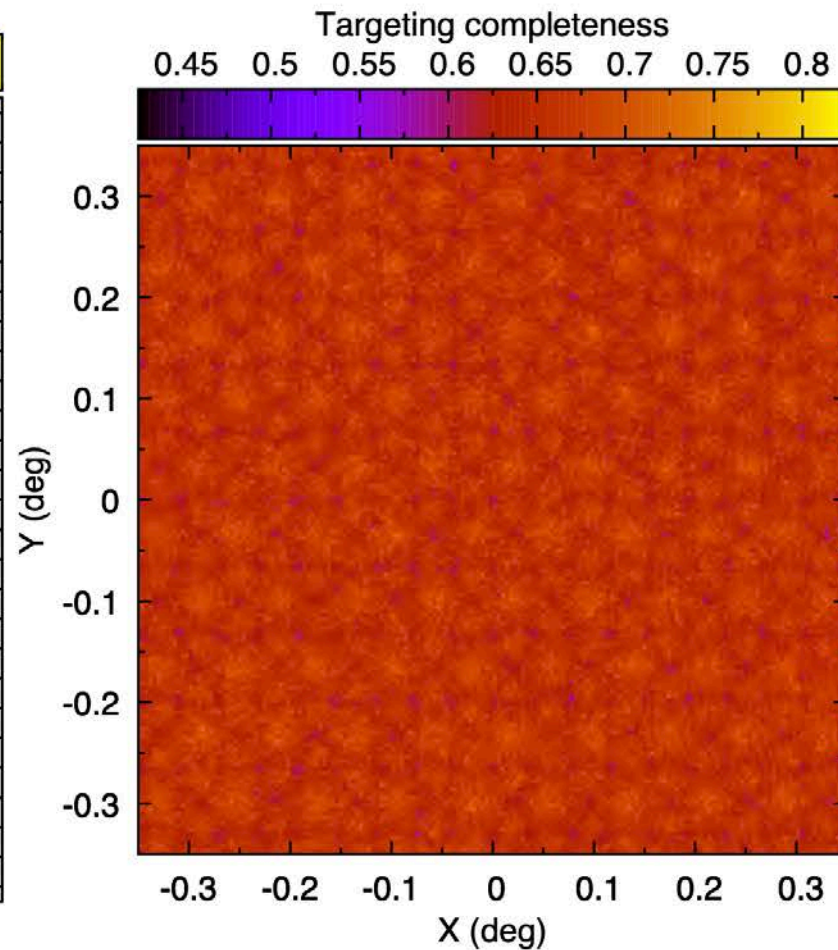
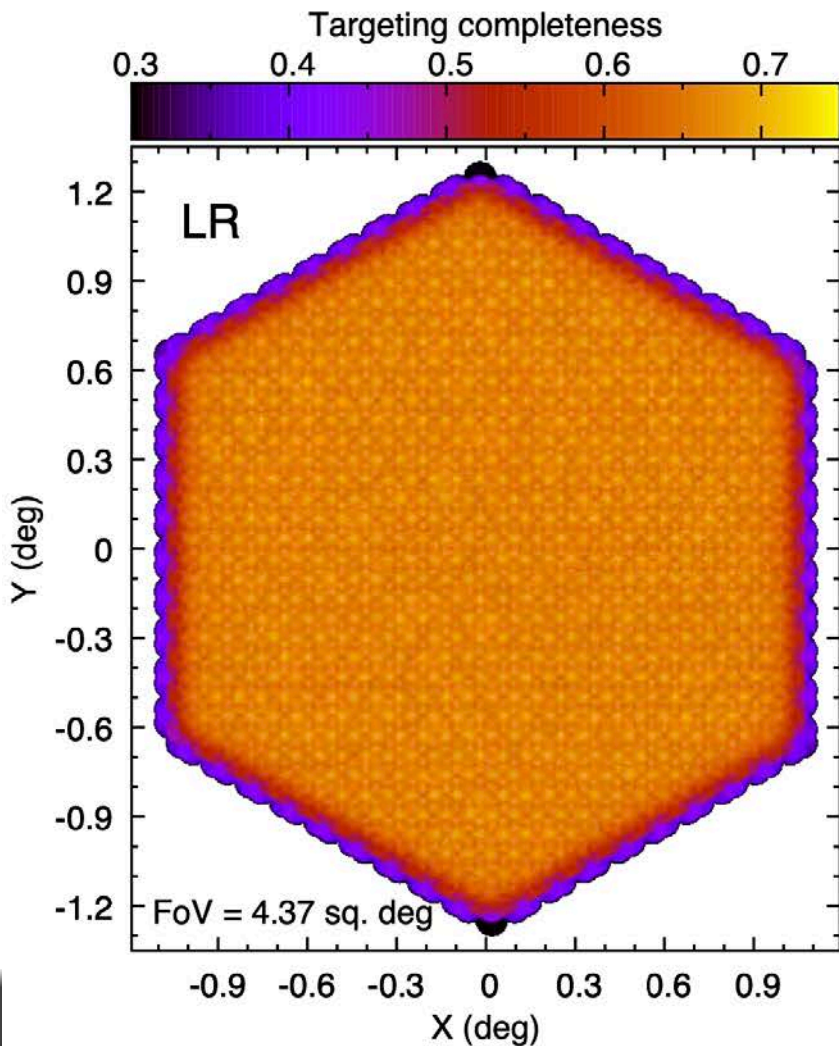
Fibre pattern in one Field of View



Random targeting vs probabilistic targeting



Probabilistic fibre to target allocation



Random targeting

