

Twelve for dinner: The Milky Way's feeding habits shine a light on dark matter



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Image credit: James Josephides
and S5 Collaboration

Jan 11, 2022 AAS Press Conference

Publication "[S⁵: The Orbital and Chemical Properties of One Dozen Stellar Streams](#)"



Key Members of S⁵ Team



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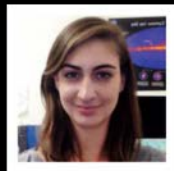
Sergey Koposov



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Jeremy Mould



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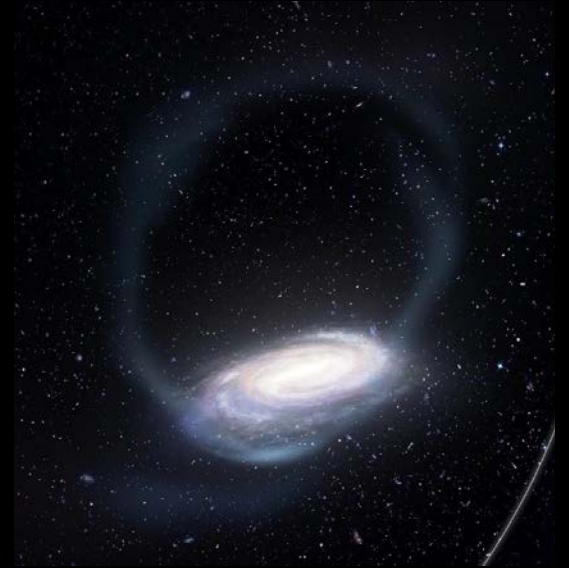
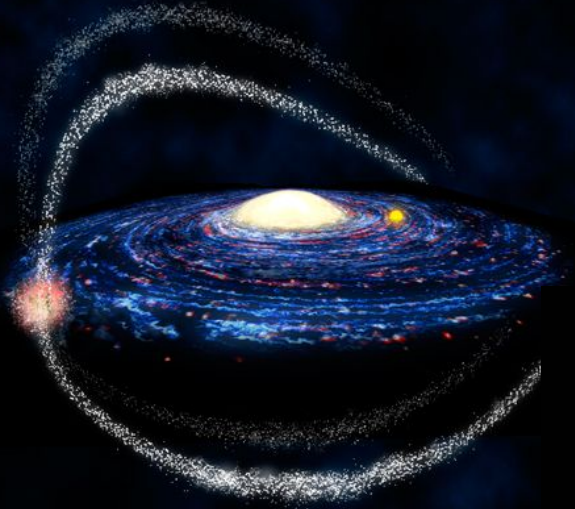


Joss Bland-Hawthorn

and Lara Cullinane, Gary Da Costa, Dougal Mackey, Zhen Wan, Sahar Allam, Eduardo Balbinot, Keith Bechtol, Vasily Belokurov, Andrew Casey, Gayandhi De Silva, Alex Drlica-Wagner, Marla Geha, Sarah Martell, Sanjib Sharma, Josh Simon, Douglas Tucker, Kathy Vivas, Risa Wechsler, Brian Yanny ...

<https://s5collab.github.io/>

Stream in press releases



A homogeneous study of 12 stellar streams

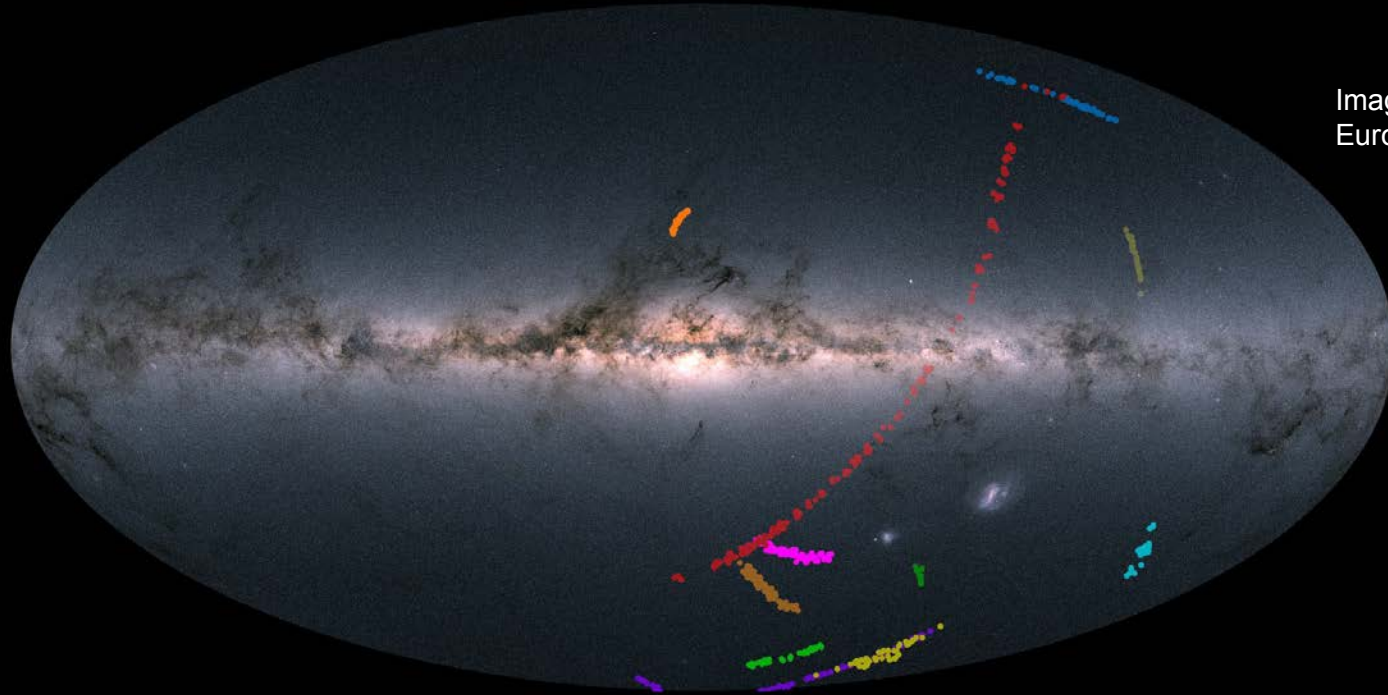
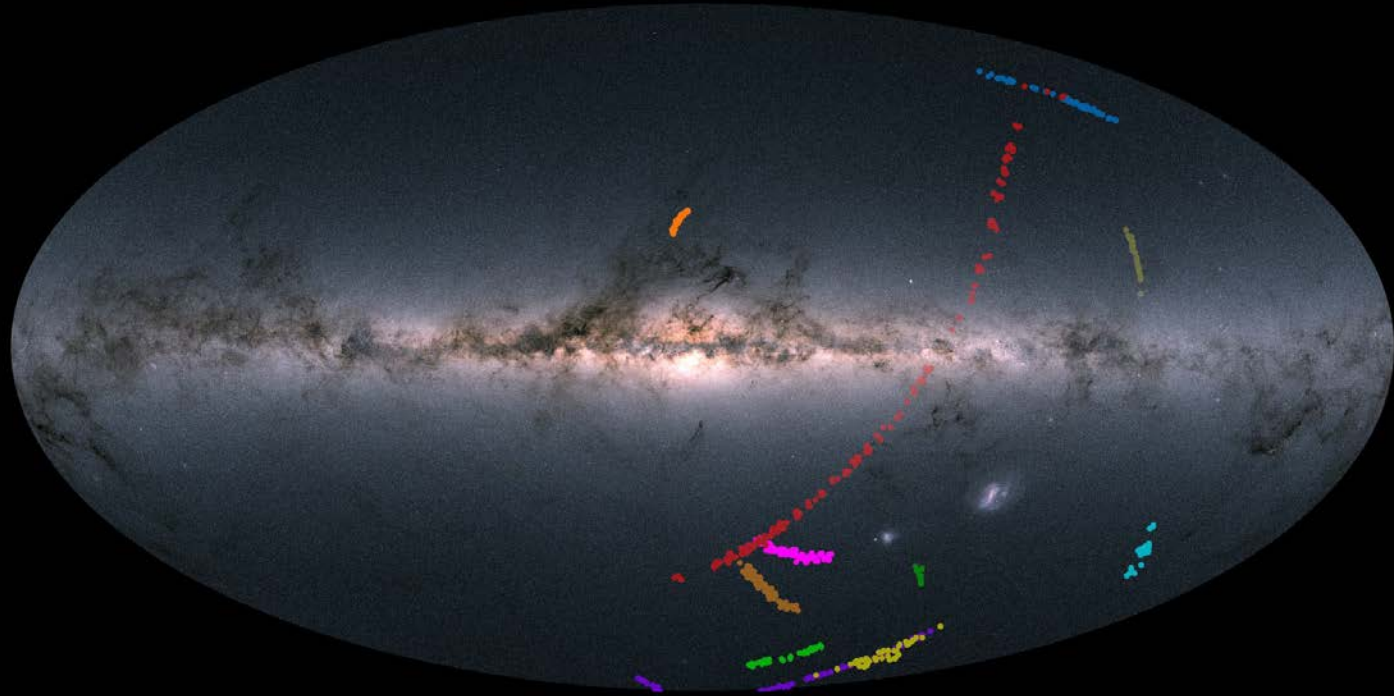


Image credit: S5 Collaboration and European Space Agency

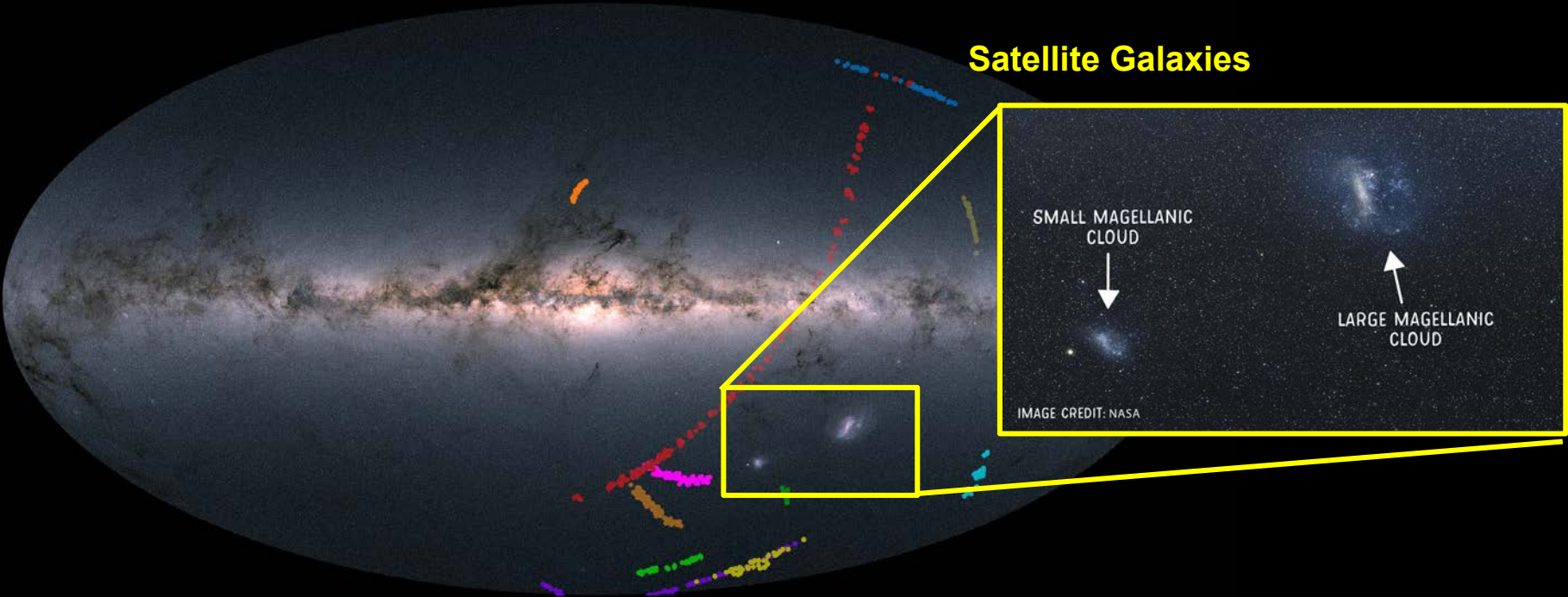
3D Location
3D Motion
Chemistry

- The “feeding habits” of the Milky Way
- The invisible dark matter in the Milky Way

Companions of the Milky Way



Companions of the Milky Way



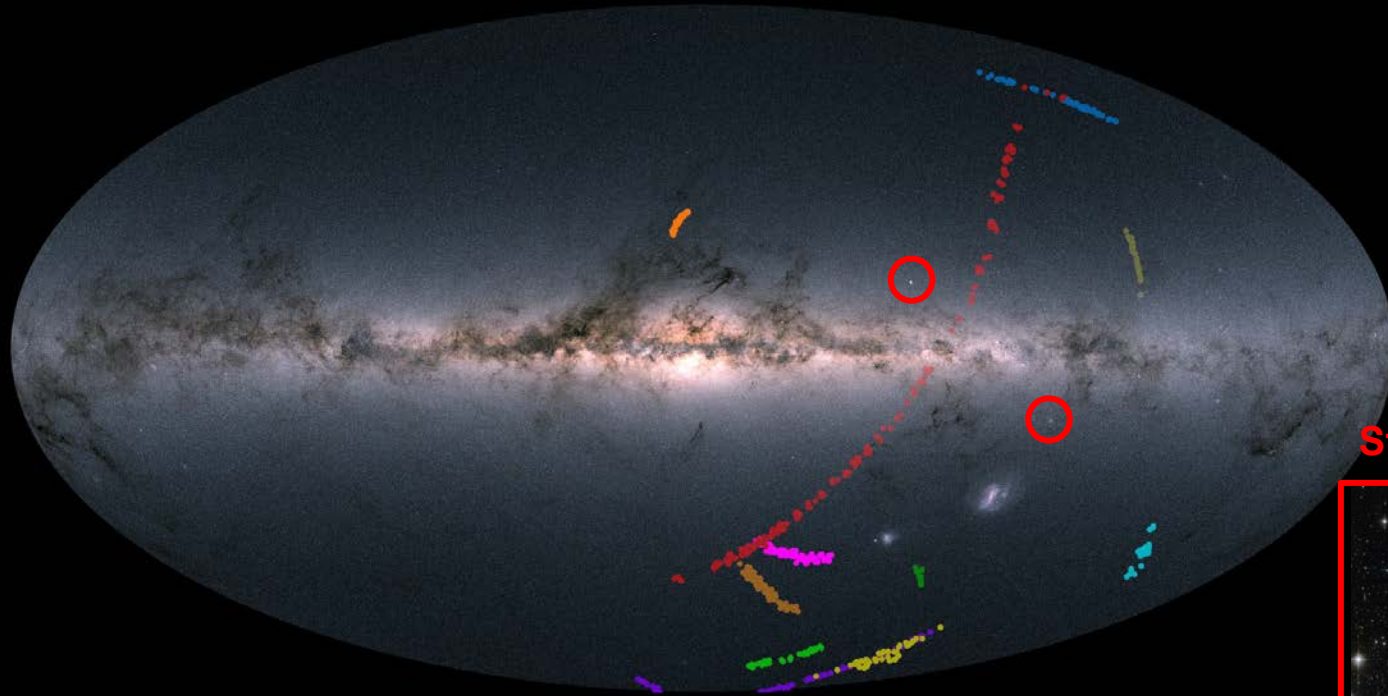
Satellite Galaxies

SMALL MAGELLANIC CLOUD

LARGE MAGELLANIC CLOUD

IMAGE CREDIT: NASA

Companions of the Milky Way

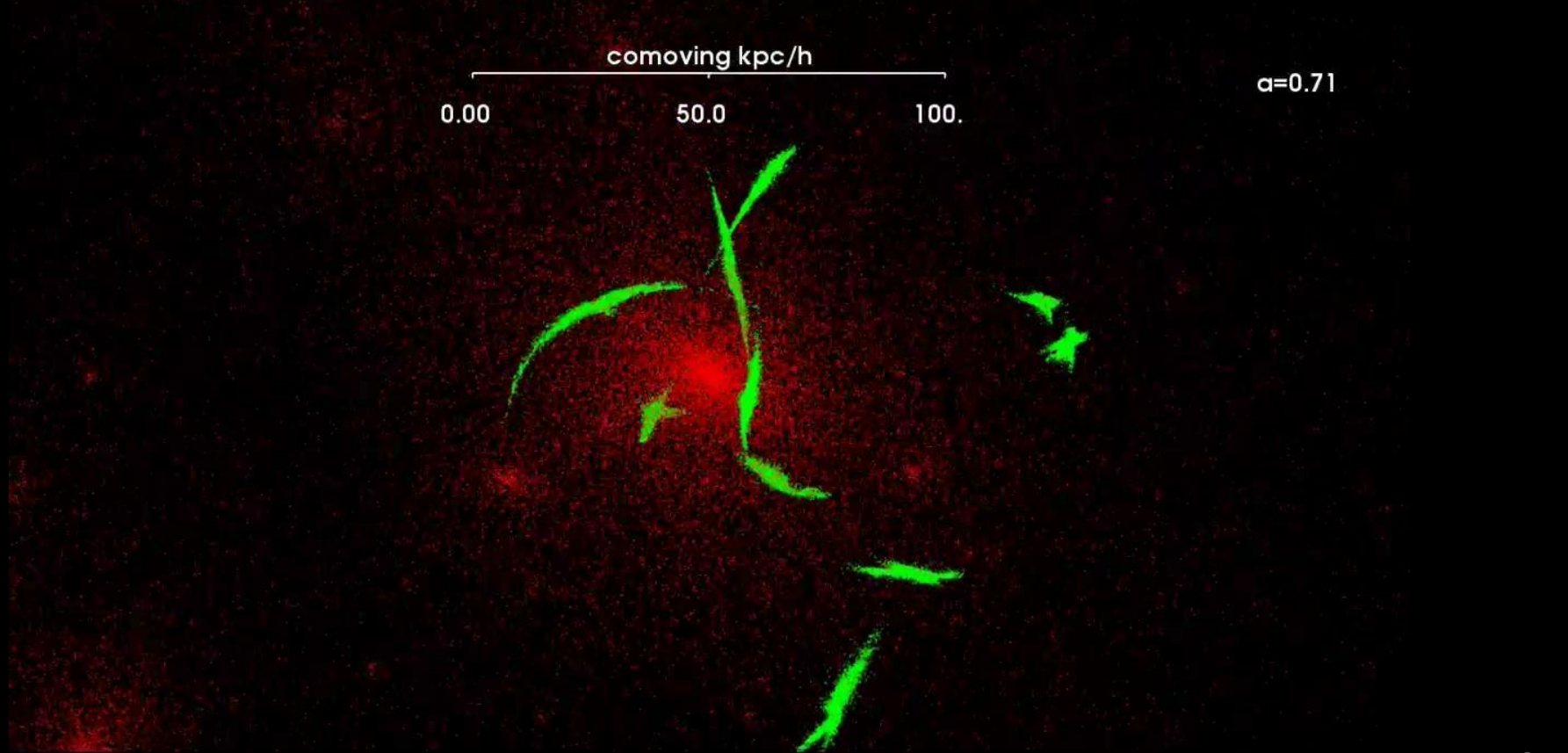


Star Clusters



IMAGE CREDIT: NASA HST

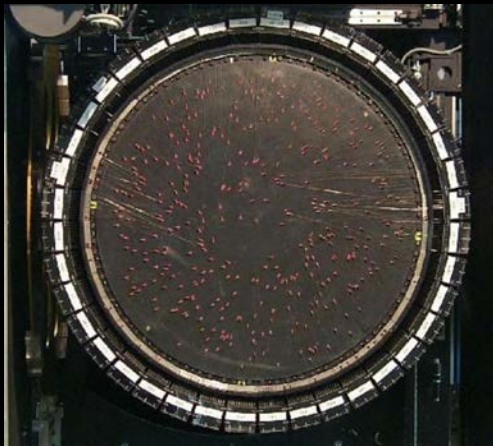
Stellar streams are shredded remains of neighboring satellite galaxies and star clusters that are torn apart by the Milky Way



Southern Stellar Stream Spectroscopic Survey (S5)



3.9-m Anglo-Australian
Telescope (AAT)

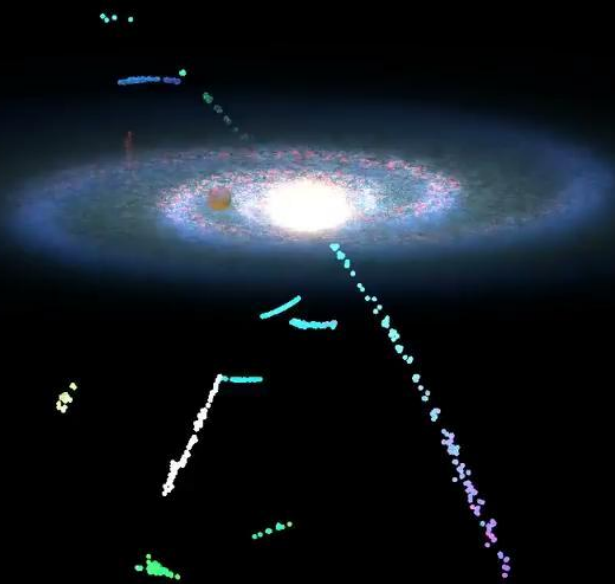


fiber positioner
400 targets at a time

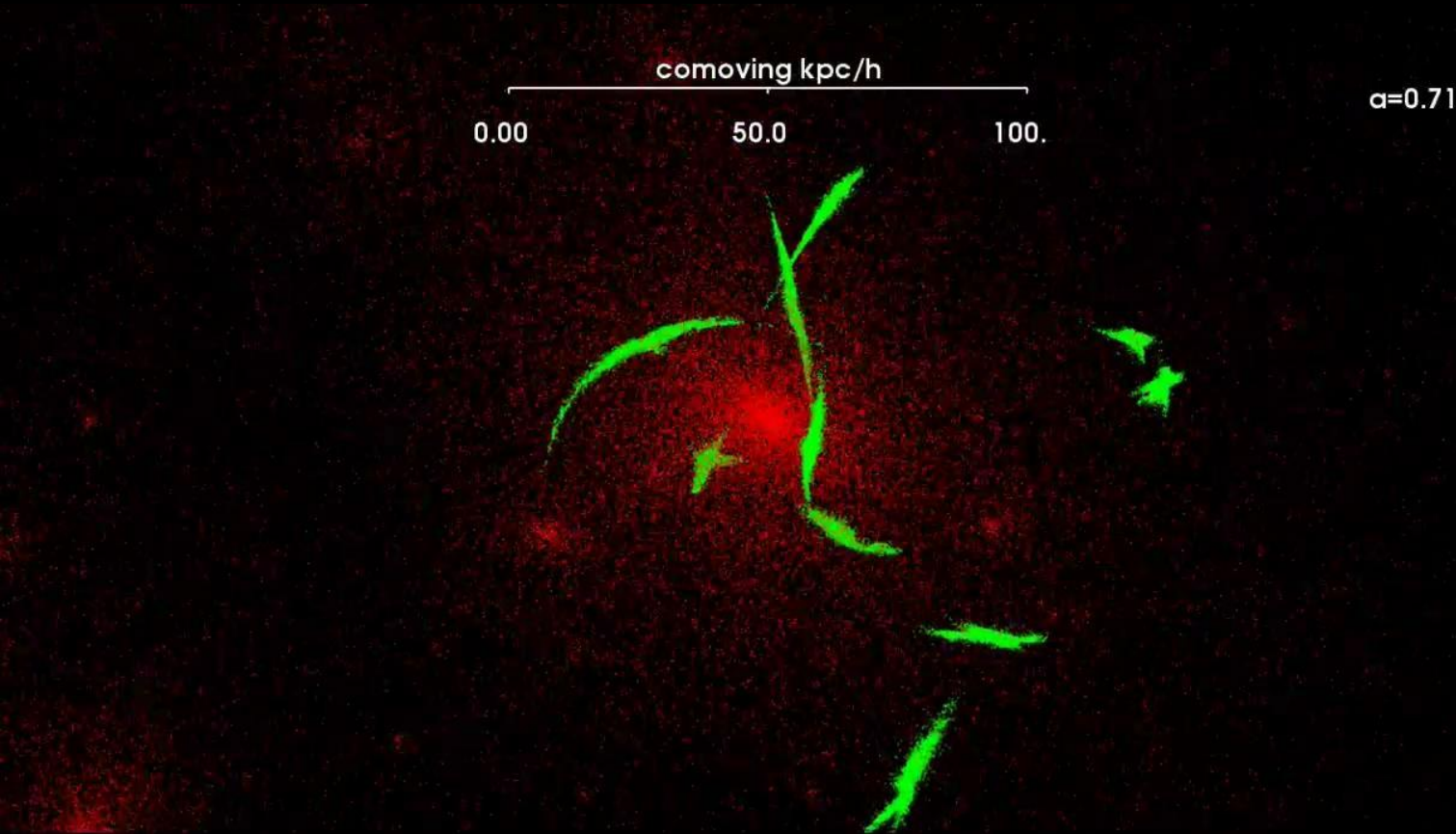
- S5 started in 2018
- Over 70 nights on AAT
- Properties of stellar streams
 - 3-D Location
 - 3-D Motion
 - Chemistry
- What Milky Way “eats”
 - Satellite galaxies or star clusters?
 - Their orbits
 - Their masses and ages



Southern Stellar Stream Spectroscopic Survey (S5)



Stellar streams can map the distribution of invisible dark matter



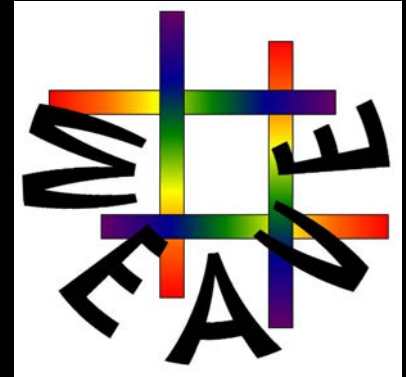
Pathfinder for the next generation spectroscopic surveys



SDSS-V

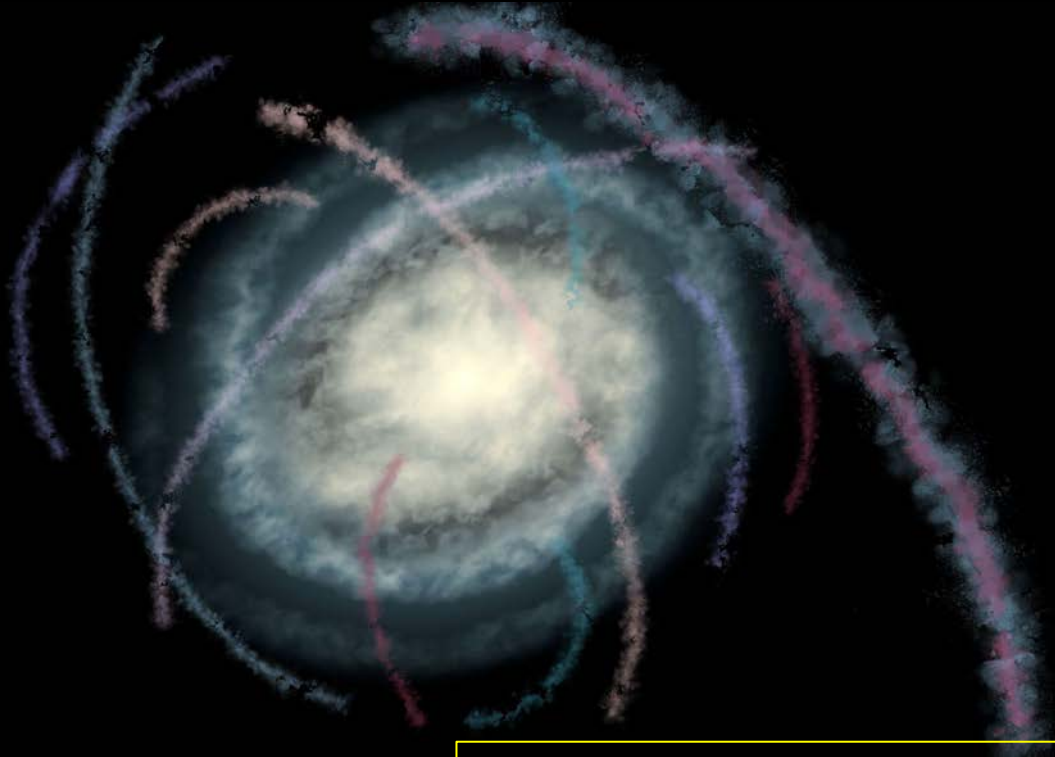


**Prime Focus
Spectrograph**



**DARK ENERGY
SPECTROSCOPIC
INSTRUMENT**

Thanks for your attention!



Check more details at:

<https://s5collab.github.io/#portfolio>

Useful links

All images and videos are available at:

https://s5collab.github.io/one_dozen_streams_press_release/

Our main press release is at:

https://www.dunlap.utoronto.ca/dozen_stellar_stream/

S5 website:

<https://s5collab.github.io/>

Back up: View centered on one stellar stream

