DESI-II and S5 spectroscopic surveys can test dark matter particle predictions in the Milky Way and its satellites

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- Large area + high sensitivity; same drivers as cosmic structure surveys
- Surveys of 1000s of square degrees, 10s of millions of stars can make comprehensive tests of predictions, now and as DM models evolve

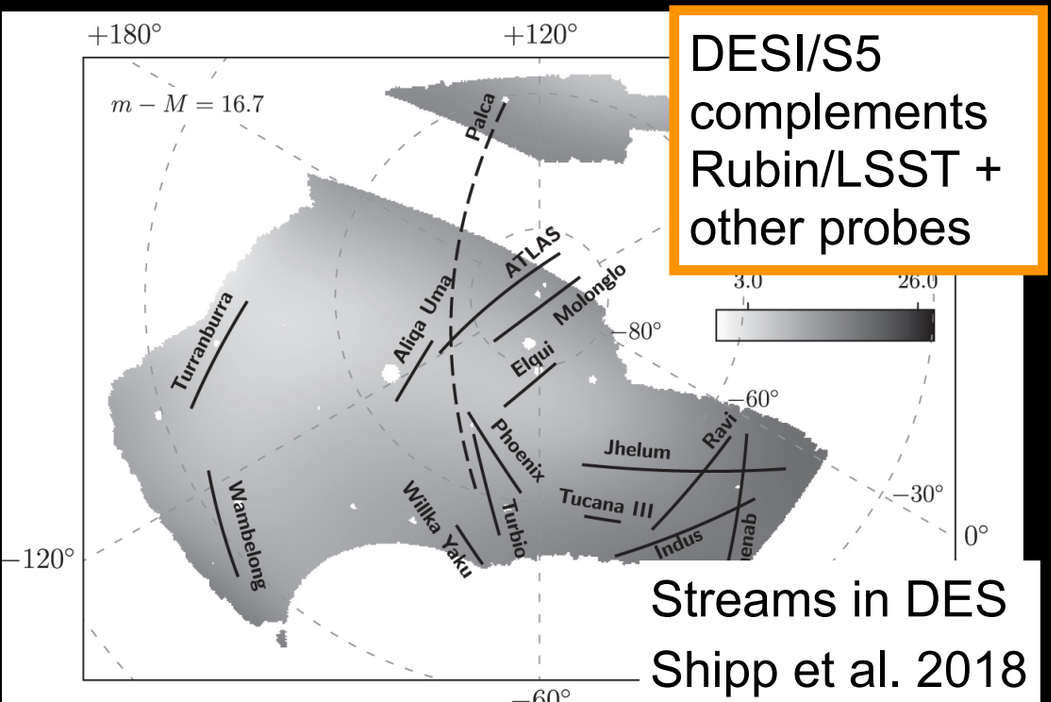
Velocities of thousands of stars in MW dwarf satellites

Map shape and density DM halos
Low mass, DM dominated regime

Kinematic maps of MW stellar streams

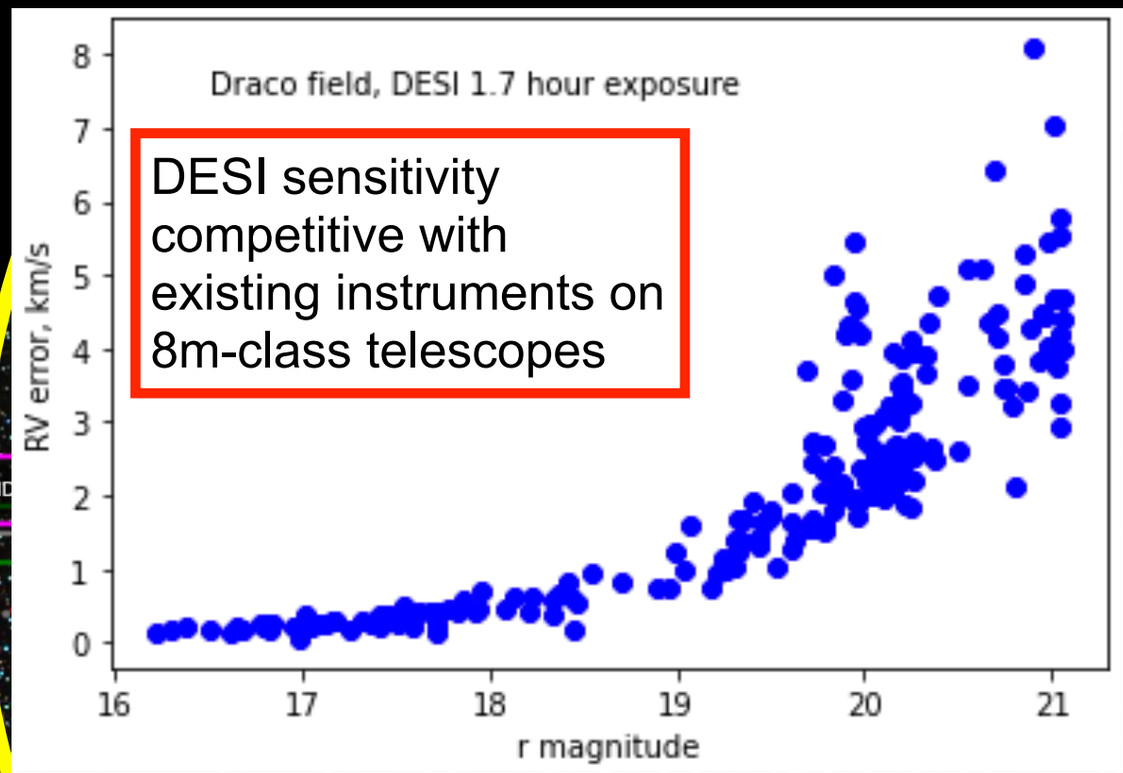
~100 known (so far), large on the sky

Perturbations constrain spectrum of lowest mass DM halos

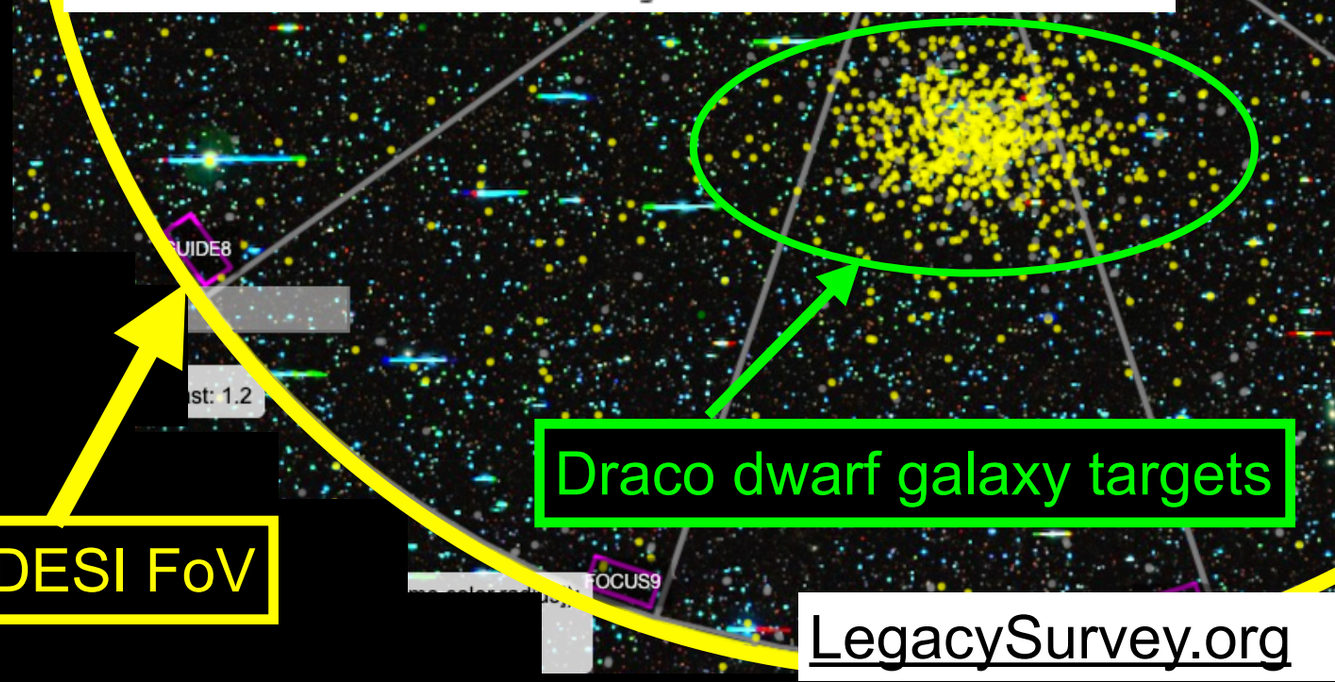


Streams in DES
Shipp et al. 2018

DESI/S5 complements Rubin/LSST + other probes



DESI sensitivity competitive with existing instruments on 8m-class telescopes



DESI FoV

Draco dwarf galaxy targets

LegacySurvey.org