

New tidal streams found in Andromeda reveal history of galactic mergers

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Erik Tollerud (University of California Irvine)

Evan Kirby (California Institute of Technology)

... .. on behalf of the SPLASH collaboration

Spectroscopic and Photometric Landscape
of Andromeda's Stellar Halo



Photo credit: Dr. Andrew Davidhazy

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AAS press conference
Galaxies Stirred, Not Shaken
January 2010, Washington DC

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$z=11.9$

800 x 600 physical kpc

Formation of the Milky Way

Via Lactea I Computer Simulation

Diemand, Kuhlen, Madau 2006

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Traditional view of the
Andromeda galaxy along
with two of its surviving
dwarf satellite galaxies

Image cred
Robert Gendl

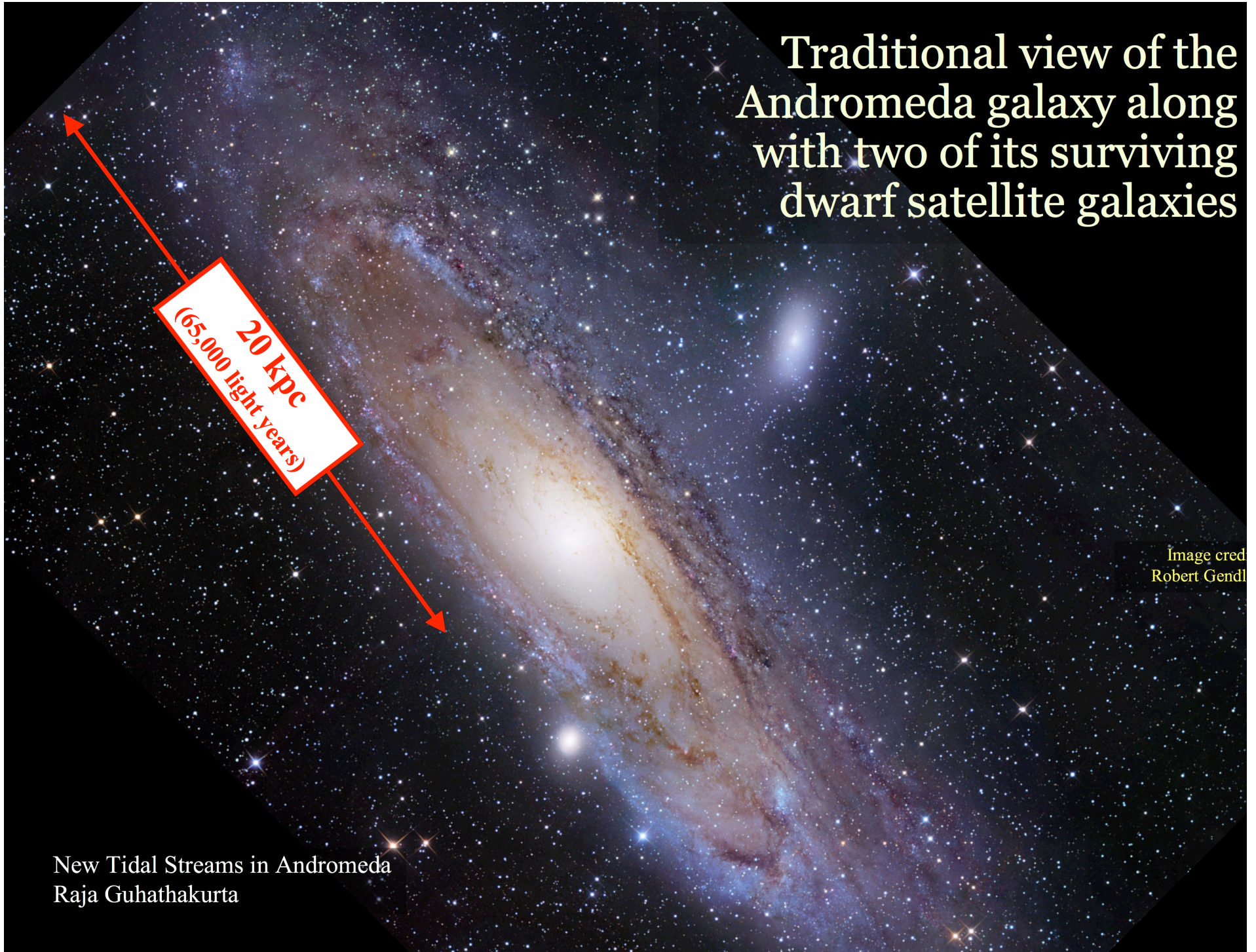
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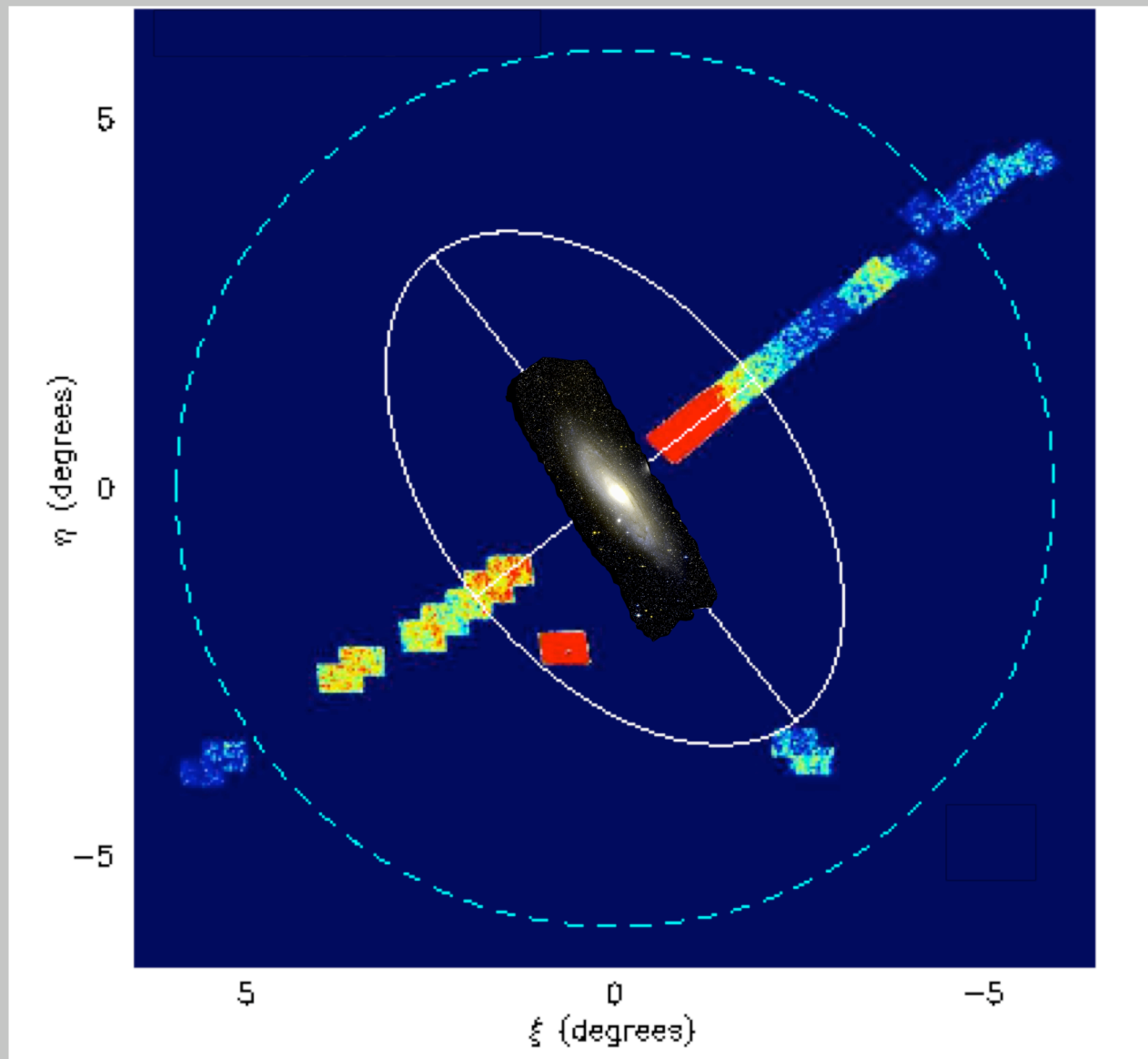
20 kpc
(65,000 light years)

Image credit
Robert Gendler

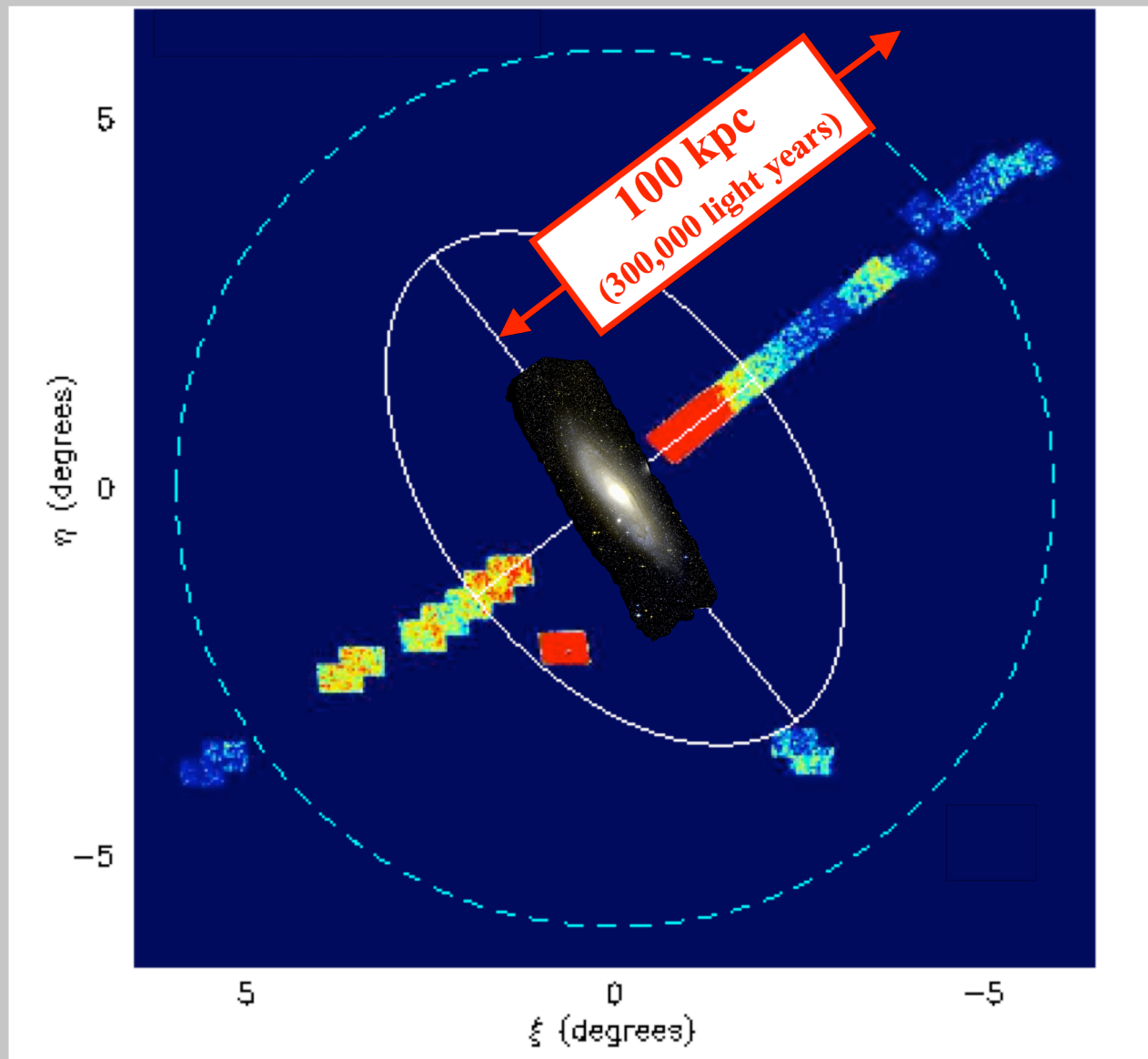
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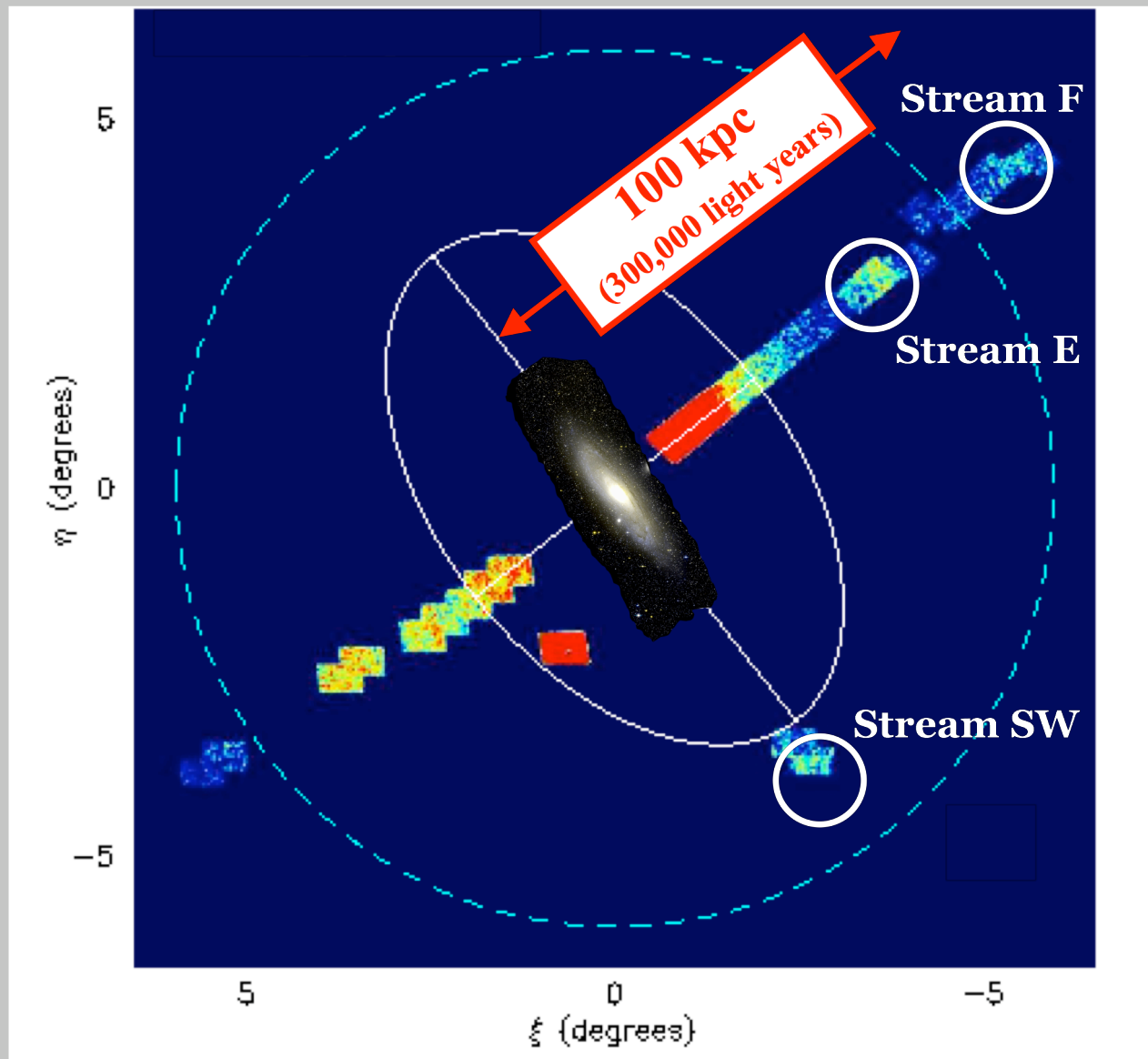
Subaru/SuprimeCam star-count map



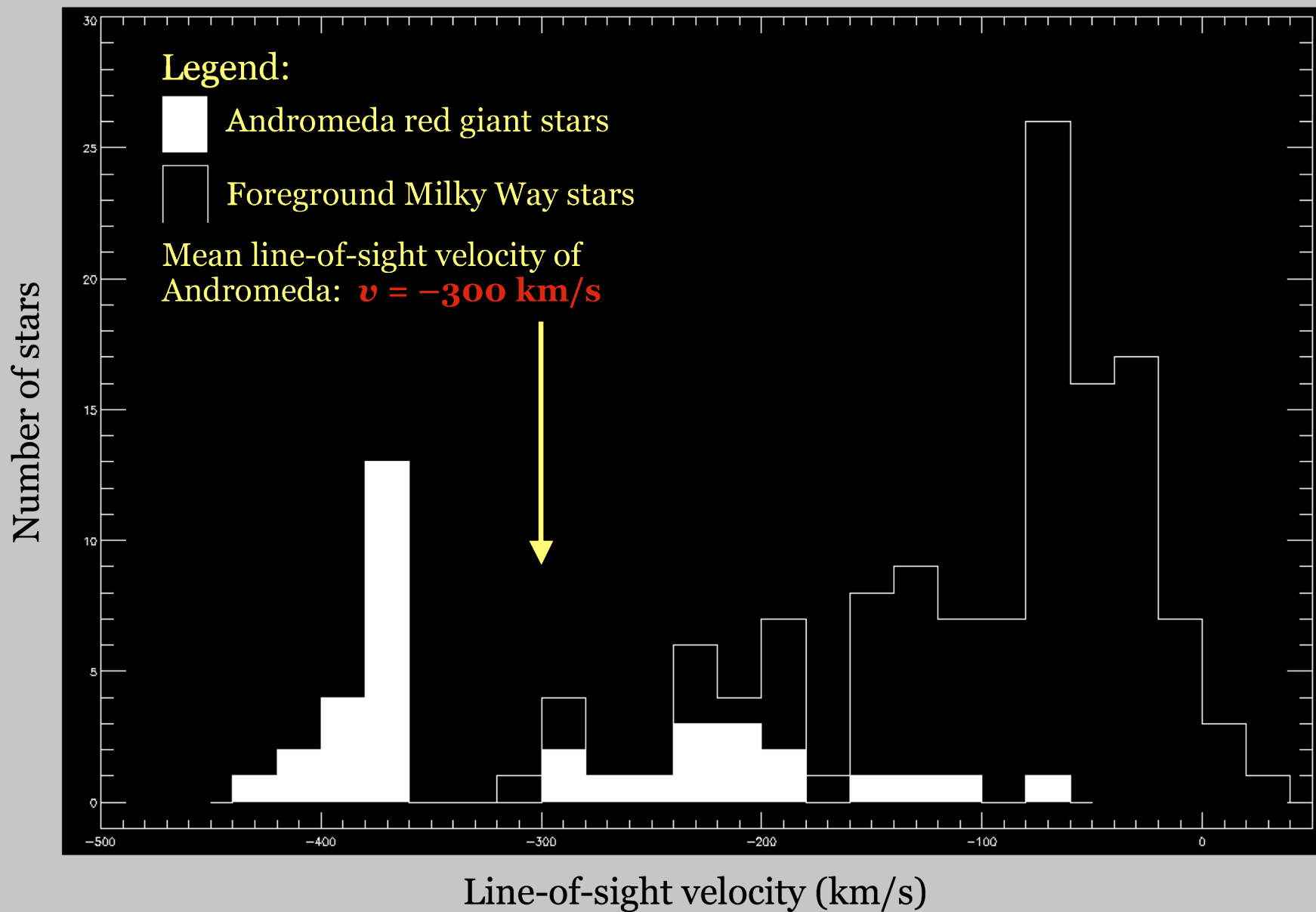
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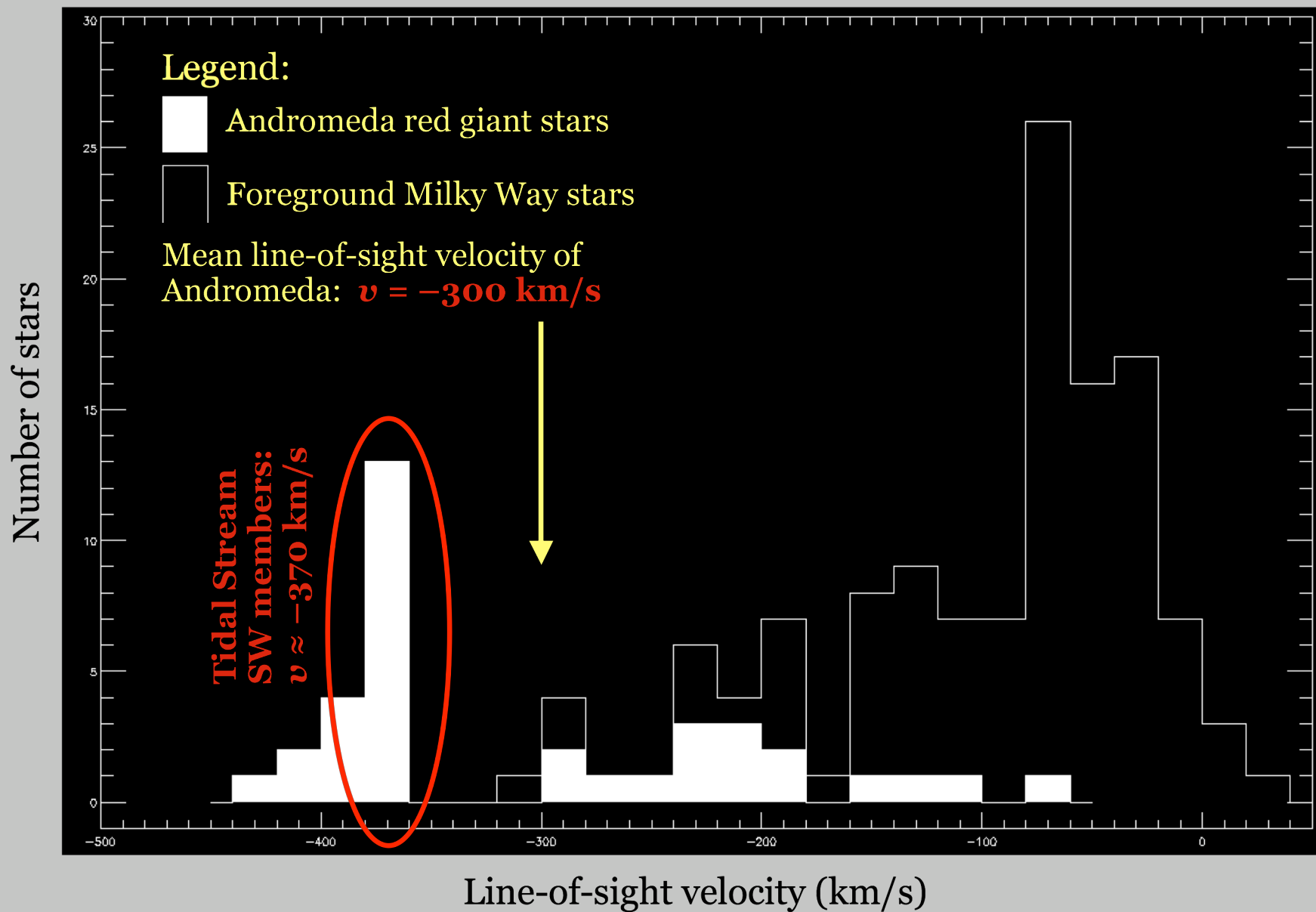
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Distribution of line-of-sight velocities in the Stream SW field



Distribution of line-of-sight velocities in the Stream SW field



Summary & Prospects

- Tidal streams are common in the Andromeda halo
- The progenitors of these streams are dwarf satellites that merged within the last couple billion years
- Tidal streams form a link between the population of intact dwarf satellites and the population of dissolved satellites (smooth halo of the parent galaxy)
- Each tidal stream acts as a tracer bullet marking the orbit of its progenitor and provides an excellent probe of the parent galaxy's gravity and hence its dark matter halo
- Next-generation optical/infrared telescopes (e.g., Thirty Meter Telescope) will allow similarly detailed studies of more distant galaxies in a variety of environments

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