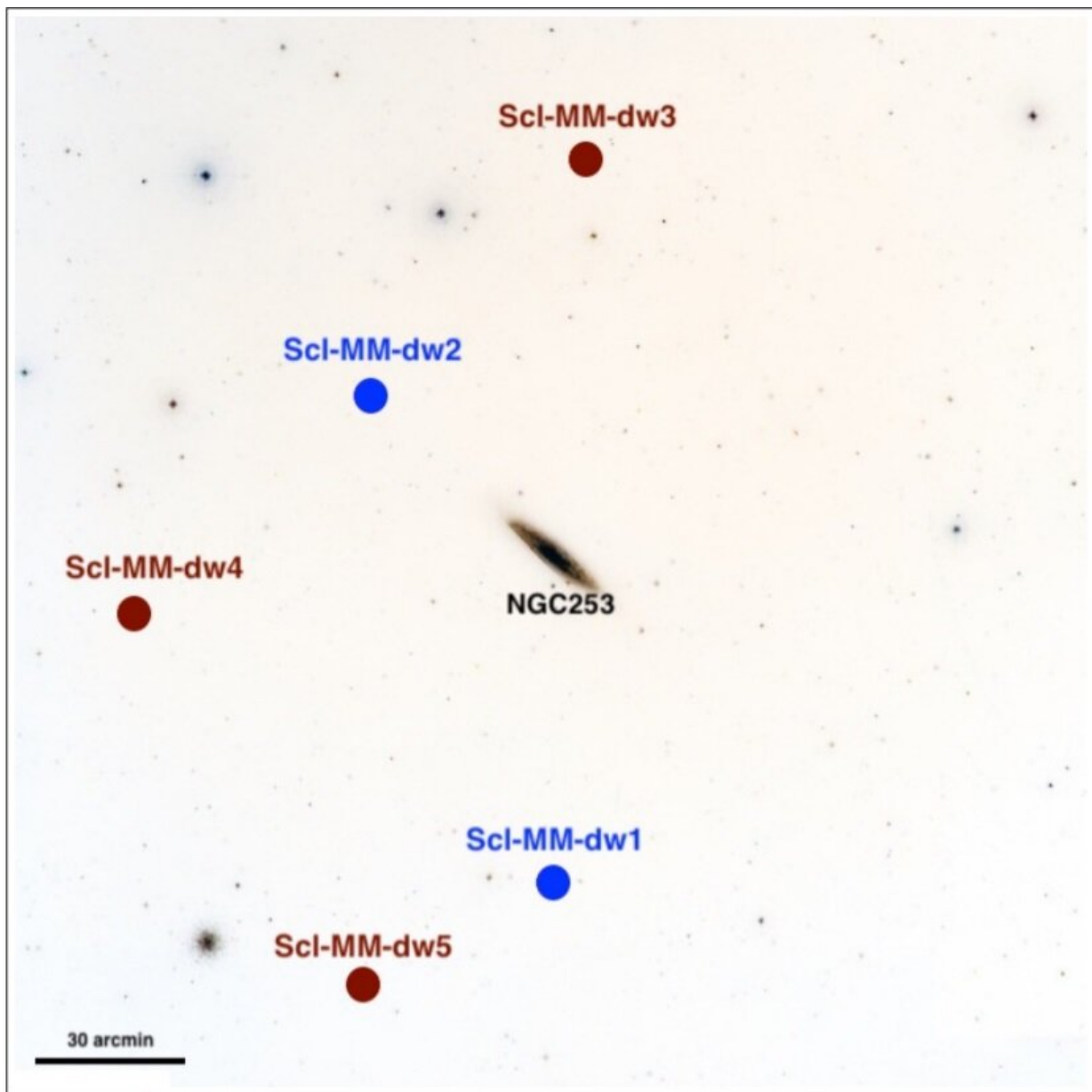


Three new ultra-faint dwarf galaxies discovered

August 31 2021, by Tomasz Nowakowski



DSS image centered on NGC 253, showing the area explored by PISCeS, extending up to 100 kpc from the center. Solid blue circles represent the position of dwarfs previously discovered in PISCeS. Credit: Mutlu-Pakdil et al., 2021.

Using the Hubble Space Telescope (HST), astronomers have detected three new ultra-faint dwarf galaxies associated with the nearby spiral galaxy NGC 253. The newly found dwarfs turn out to be among the faintest systems so far discovered beyond the Local Group. The finding is reported in a paper published August 20 on arXiv.org.

The so-called ultra-faint dwarf [galaxies](#) (UFDs) are the least luminous, most [dark matter](#) dominated, and least chemically evolved galaxies known. Therefore, they are perceived by astronomers as the best candidate fossils from the universe at its early stages.

The Panoramic Imaging Survey of Centaurus and Sculptor (PISCeS) project is one of astronomical surveys aimed at finding new faint satellite galaxies, including UFDs. As part of PISCeS, a team of astronomers led by Burçin Mutlu-Pakdil of the University of Chicago has observed the field around NGC 253 with HST, searching for satellite dwarf systems. At a distance of some 11.4 million [light years](#), NGC 253 is the principal galaxy of the nearby Sculptor group.

The team visually inspected all the [images](#), searching for spatially compact overdensities of stars around NGC 253 and found three new UFDs—in addition to the two known ones identified in 2014 and 2016.

"In this work, we report the discovery of three ultra-faint dwarf [satellite](#) galaxies of NGC 253 in a visual search of the Magellan/Megacam images taken as part of PISCeS, our panoramic imaging campaign to find faint substructure within

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