Discovery of new optical and X-ray supernova remnants in nearby galaxies: Improved identification through multi-line diagnostics

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**Goal: Systematic, multi-wavelength Study of Supernova Remnants (SNRs)**

♦ Understand feedback processes of SNRs in various galactic environments

Identification of SNRs

♦ Empirical diagnostics - 1 emission line ratio → a few dozens of SNRs/galaxy (Dodorico et al. 1980)

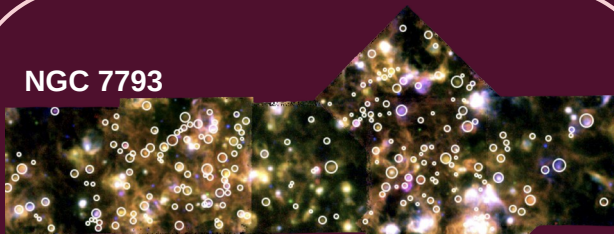♦ Model based diagnostics - more emission line ratios - Machine learning → hundreds of SNRs/galaxy
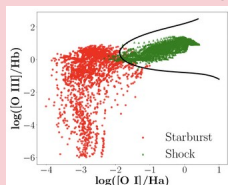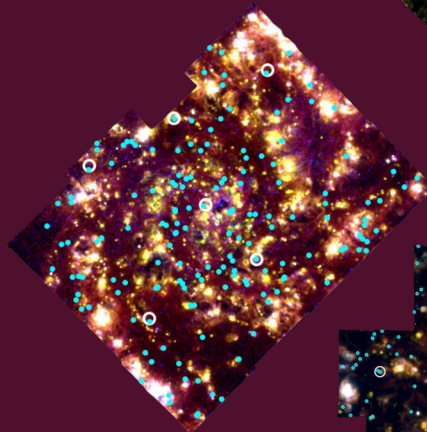
Kopsacheili et al. 2020
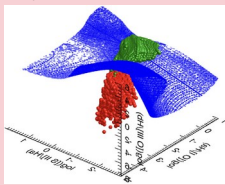
♦ MUSE IFU archival data
♦ Chandra archival data

NGC 7793

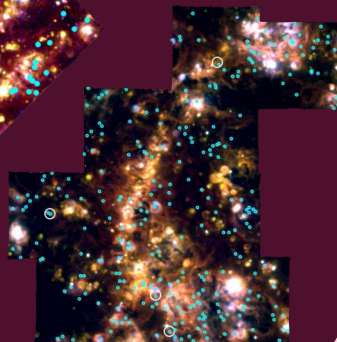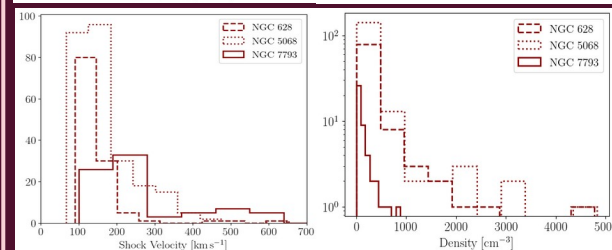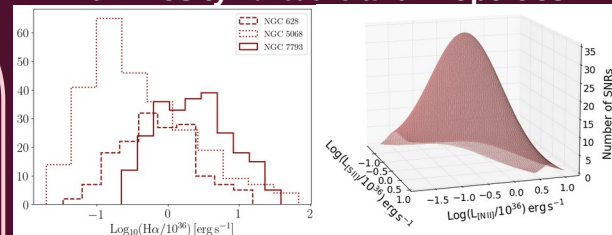NGC 5068

NGC 628

Luminosity Functions and Properties

Newly detected SNRs

Galaxy	Opt. SNRs	X-ray SNRs	Ref.
NGC 7793	~200	5	Kopsacheili et al. (2024, 2025)
NGC 628	~79	3	Musté et al. (in prep.)
NGC 5068	~176	4	Musté et al. (in prep.)