ICRAR

International Centre for Radio Astronomy Research

SU1: Local Universe

Barbara Catinella (ICRAR/UWA)

Curtin University

THE UNIVERSITY OF WESTERN AUSTRALIA

Government of Western Australia
Department of the Premier and Cabinet
Office of Science

SU1 staff members

Barbara **Catinella**

Bi-Qing **For**

Brent **Groves**

Gerhardt **Meurer**

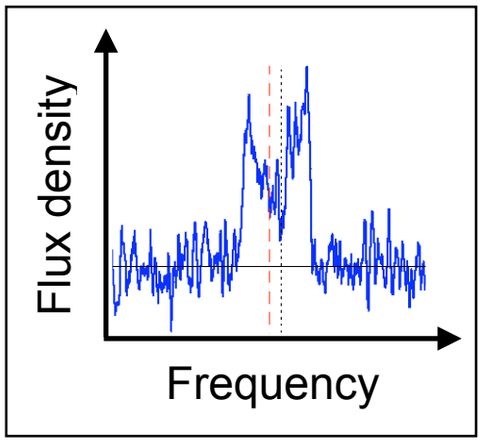
Maria **Rioja**

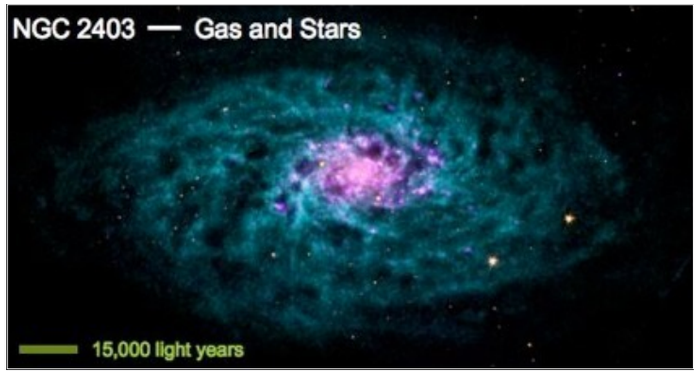
Lister **Staveley-Smith**

Tobias **Westmeier**

Ivy **Wong**

SU1 staff members: our expertise

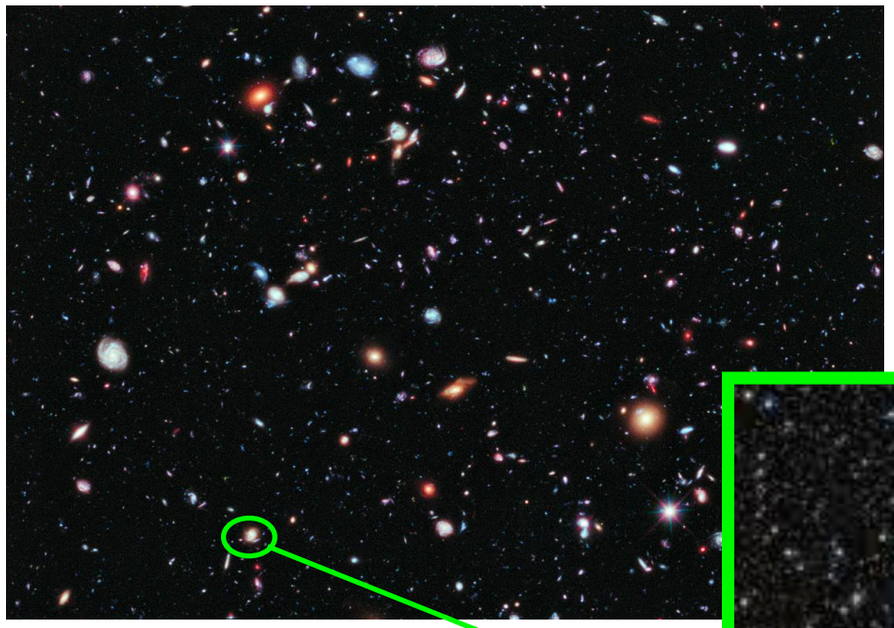




density consistent region velocity base array sample form large low local present galaxy distribution emission method line survey high gas estimate formation observation range redshift stellar find observe datum rate sub galactic mass star field study radio model use measure result new telescope time scale compare sky fraction optical measurement

How do galaxies form and evolve?

Billions of galaxies in the Universe

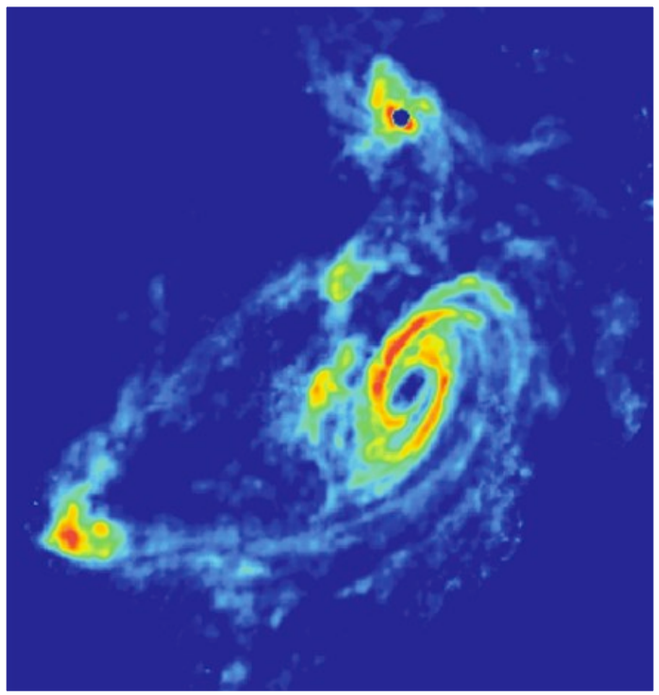


A galaxy like our Milky Way

A stellar “nursery”

- We use the **best telescopes in the world** to study how galaxies use their gas to form stars, and ultimately what physical processes determine their properties
- This requires **multi-wavelength observations** to trace all baryonic components (atomic and molecular gas, stars, dust…)

Studying galaxies with radio eyes



WALLABY

xGASS

We lead **cutting-edge radio surveys** to find answers to key open questions:

- ✦ How does environment affect galaxy properties?
- ✦ How does gas accrete onto galaxies?
- ✦ Why are some galaxies running out of gas?

Ask us about projects:

Lister **Staveley-Smith**

Ivy **Wong**

Barbara **Catinella**

WALLABY: the ASKAP HI All-sky survey

Australian SKA Pathfinder (ASKAP)
36 telescopes in radio quiet site in midwest WA
30 deg^2 field of view → **a survey machine**


ASKAP

WALLABY

- ✦ Widefield ASKAP L-band Legacy All-sky Blind Survey
- ✦ PIs: Staveley-Smith (ICRAR) & Koribalski (CSIRO)
- ✦ 75% of the sky
- ✦ **600,000 galaxies** out to z-0.26 (~3 Gyr look-back time)
- ✦ ~5000 well resolved (maps)

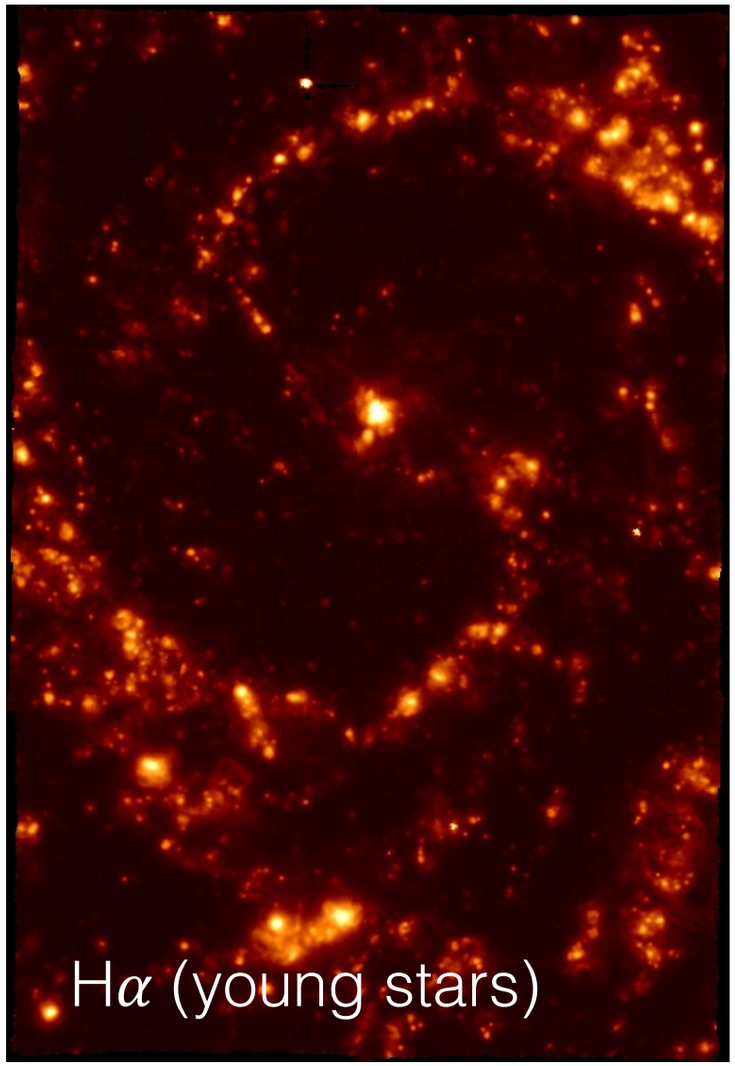
- ✦ will map distribution and kinematics of atomic hydrogen (HI) in nearby Universe
- ✦ unprecedented statistics: largest census of HI ever done
- ✦ detailed HI maps
- ✦ we are taking data!!

Ask us about projects:


Lister **Staveley-Smith**


Barbara **Catinella**

Star formation in nearby galaxies



muse
multi unit spectroscopic explorer

PHANGS

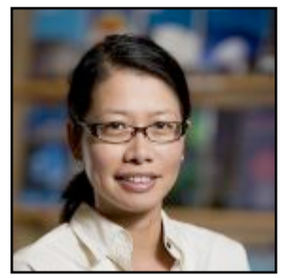
xGASS

SINGG/
SUNGG

- What regulates star formation in nearby galaxies?
- Why are some galaxies actively forming stars, and others not at all?

Ask us about projects:

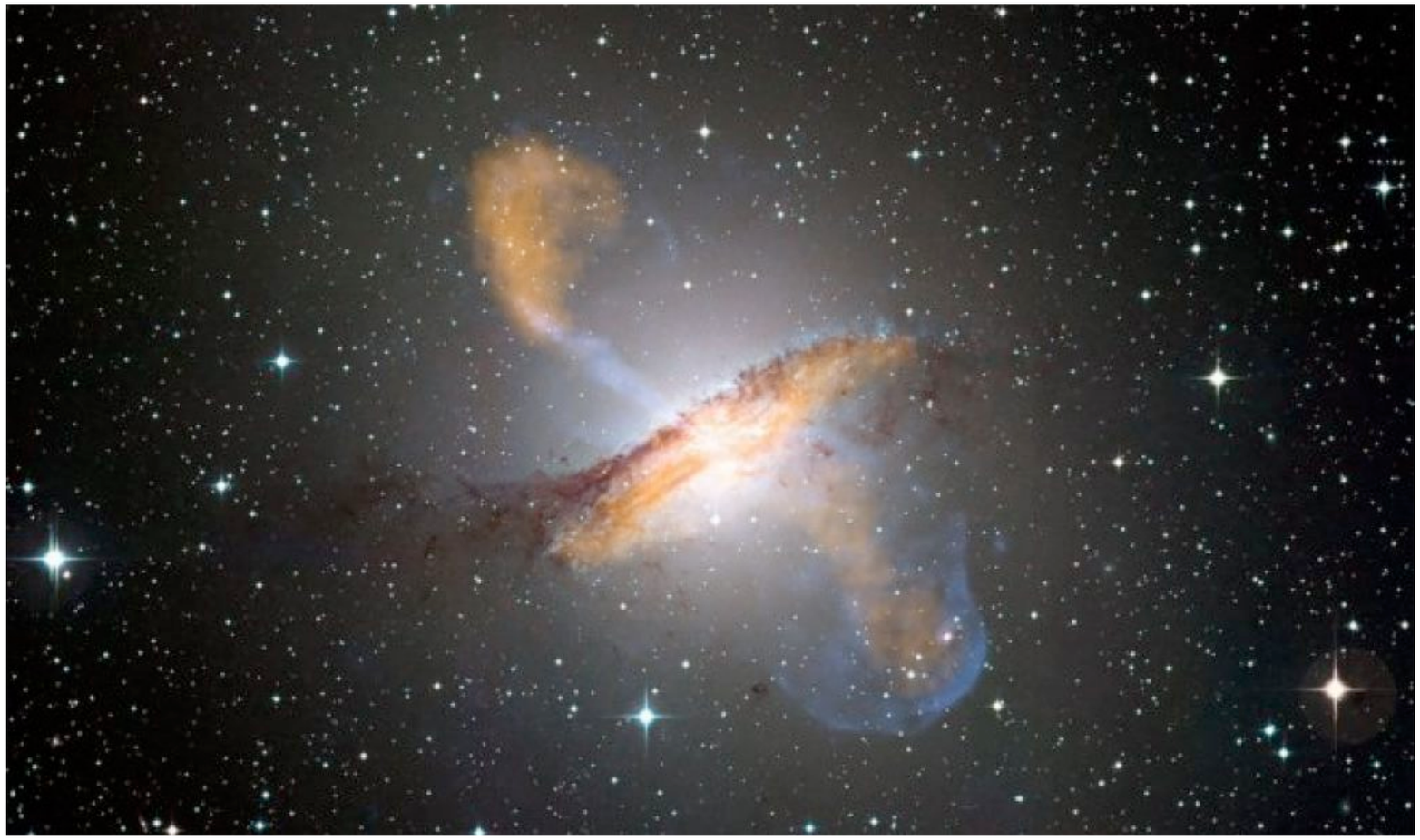
Brent **Groves**



Ivy **Wong**

Barbara **Catinella**

Star formation in active galaxies



BASS
BAT AGN Spectroscopic Survey

Most massive galaxies host central supermassive black holes, known as **active galactic nuclei** (AGN)

- ✦ How do AGN affect the gas content and star formation in galaxies?
- ✦ How do galaxies hosting AGN differ from others that don't?

Ask me about projects:

Ivy **Wong**