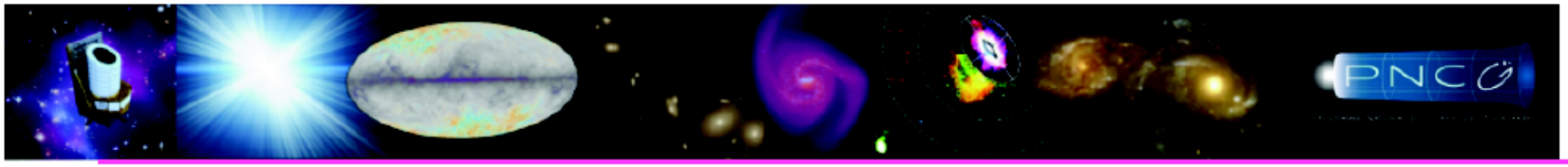
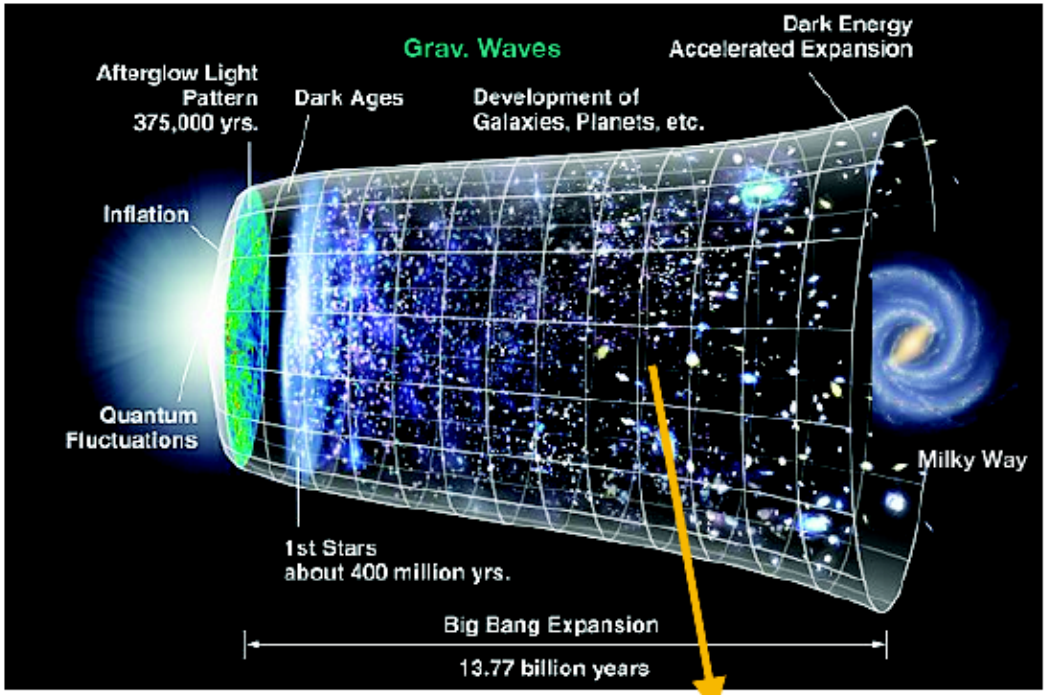
Programme National de Cosmologie et Galaxies

PNCG

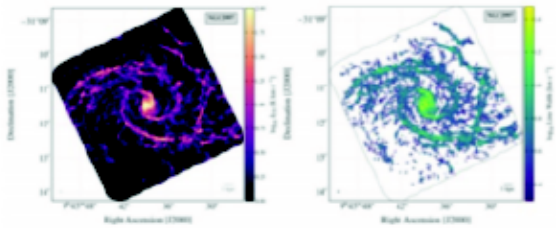


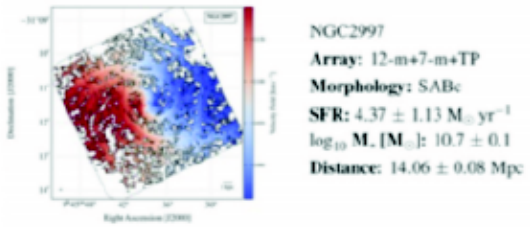
https://pncg.lam.fr/

1. **The model of the Universe**
   - The cosmological model and its parameters
   - Primordial Universe (baryogenesis, inflation), CMB
   - Nature of Dark Matter and Dark Energy
   - Theory of gravitation
2. **Formation and evolution of large structures**
   - Cosmic Web, distribution of baryons and Dark Matter on large scale and its evolution
   - Intergalactic medium
   - Groups and clusters of galaxies
   - Large voids
   - Reionization
3. **Formation and evolution of galaxies**
   - The first galaxies
   - Statistical properties of galaxies
   - Physics of galaxy growth
   - Link with the environment
4. **Nearby galaxies and Galactic Archaeology**
   - Link of star formation with the interstellar medium
   - Stellar populations
   - Chemical enrichment and primordial gas
   - Galactic dynamics and dark matter



Interstellar medium (gas, dust), star formation, feedback



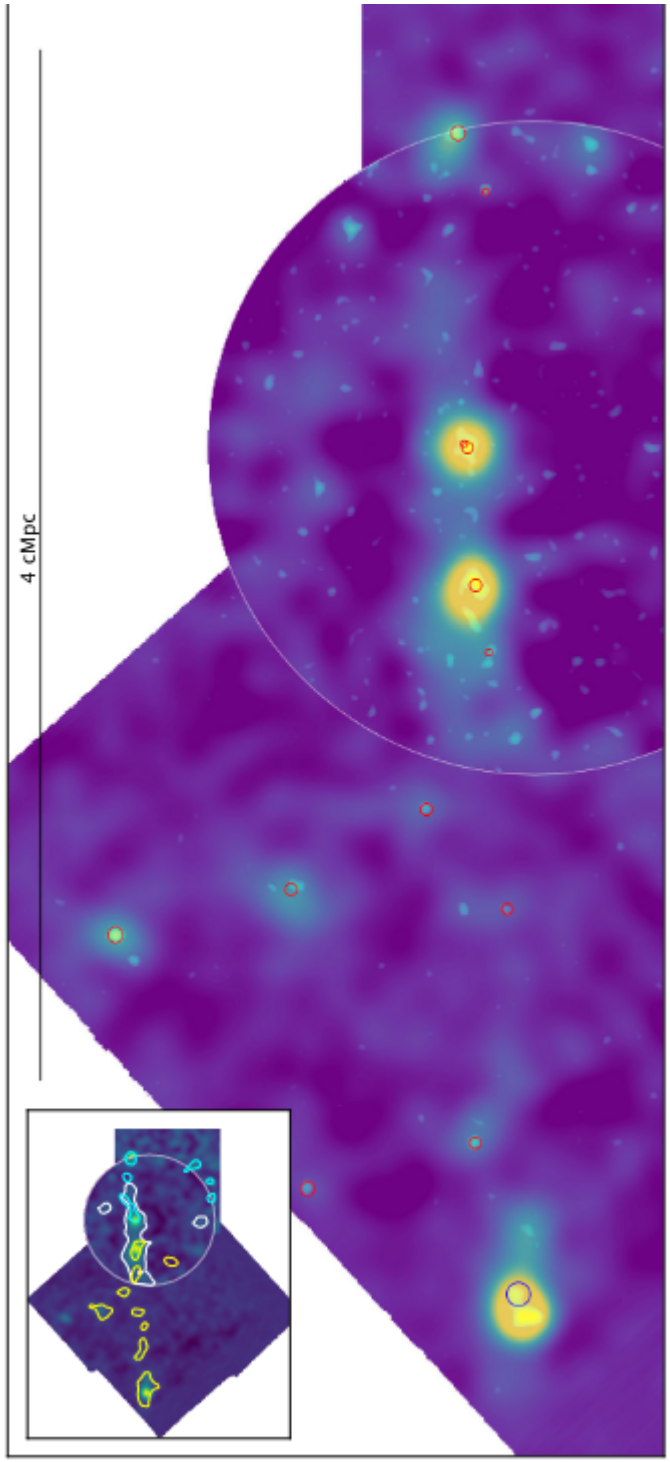


NGC2997
Array: 12-m+7-m+TP
Morphology: SABc
SFR: $4.37 \pm 1.13\ M_\odot\ yr^{-1}$
$\log_{10} M_* [M_\odot]$: 10.7 ± 0.1
Distance: 14.06 ± 0.08 Mpc

PHANGS–ALMA: Arcsecond CO(2–1) Imaging of Nearby Star-Forming Galaxies *Leroy, Schinnerer, Hughes, et al.*

Role (Scientific Council)

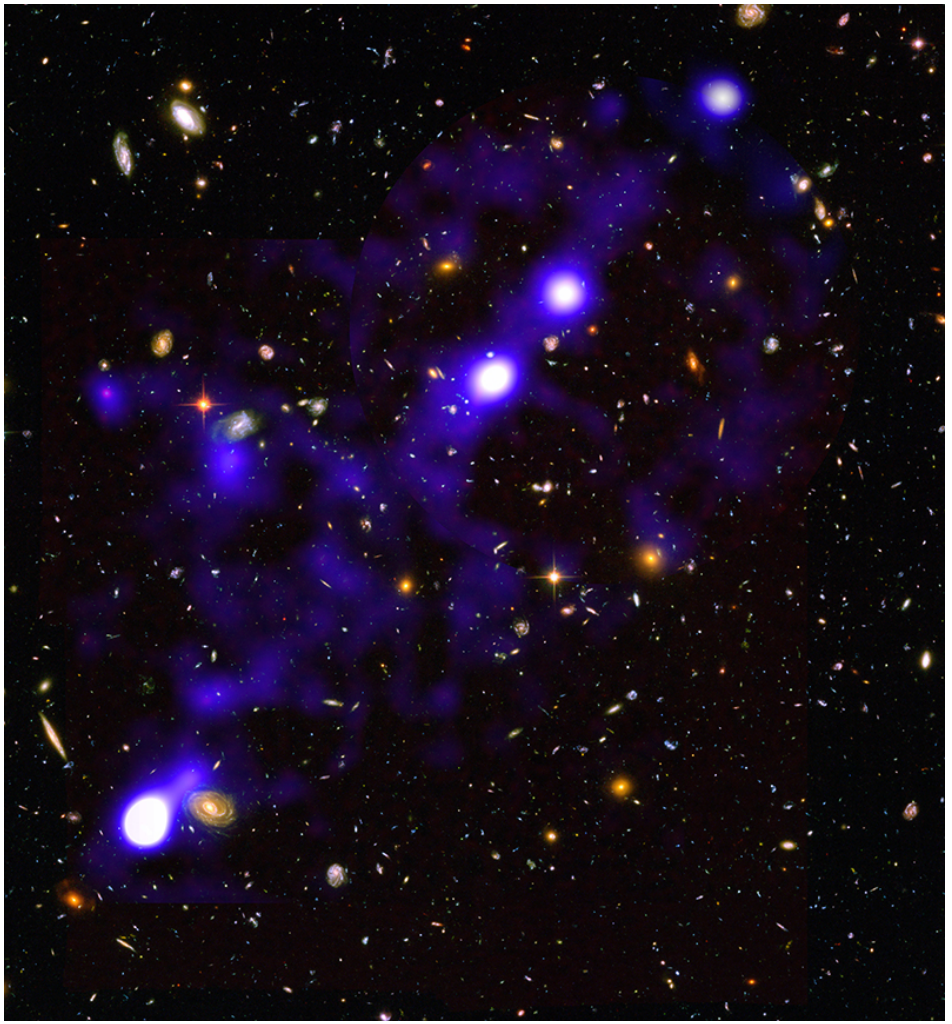
- Finance Schools, workshops
- Provide small grants to researchers (3-10kEur)
- Propose/Represents at TAC / Committees
- Structuration around instrumentation (ELT, etc) & simulation projects



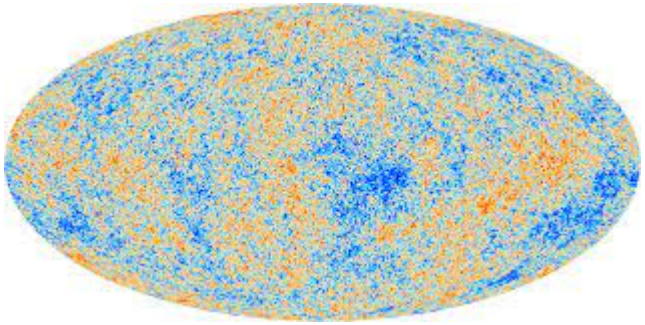
The MUSE Extremely Deep Field: The cosmic web in emission at high redshift*

R. Bacon[1], D. Mary[2], T. Garel[3,1], J. Blaizot[1], M. Maseda[4], J. Schaye[4], L. Wisotzki[5], S. Conseil[6], J. Brinchmann[7,4], F. Leclercq[3], V. Abril-Melgarejo[9], L. Boogaard[4], N. F. Bouché[1], T. Contini[8], A. Feltre[13,1], B. Guiderdoni[1], C. Herenz[14], W. Kollatschny[10], H. Kusakabe[3], J. Matthee[11], L. Michel-Dansac[1], T. Nanayakkara[12], J. Richard[1], M. Roth[5], K. B. Schmidt[5], M. Steinmetz[5], L. Tresse[1], T. Urrutia[5], A. Verhamme[3], P. M. Weilbacher[5], J. Zabl[1], and S. L. Zoutendijk[4]

140hr deep MUSE / HUDF



PNCG highlights



- Planck DR 2018

  F. Boulanger
- ALMA LP: ALPINE-C+

  O. Lefèvre, M. Béthermin
- PHANGS-alma&MUSE

  cols: A. Hughes, A.Leroy

- Concerto/APEX
  - G. Lagache
- GAIA
  - Many results