



# 4MOST – StePS

Angela Iovino  
INAF-OABrera

on behalf of StePS@4MOST collaboration

A. Gallazzi – F. La Barbera – M. Longhetti  
A. Mercurio – C. Tortora – S. Zibetti  
F. Belfiore – G. Busarello – L. Cassarà – G. Cresci  
E. Corsini – L. Costantin – G. DeLucia  
R. De Propris – F. Fontanot – M. Hirshmann  
C. Mancini – F. Mannucci – P. Merluzzi – L. Morelli  
A. Moretti – A. Pasquali – A. Pizzella  
B. Poggianti – L. Pozzetti – G. Rodighiero  
B. Vulcani – D. Vergani – A. Zanella

F. D'Eugenio – A. DeLorenzo Caceres  
A. Ferre-Mateu – R. Garcia-Benito  
R. Gonzalez-Delgado – B. Granett – C. Haines  
S. McGee – P. Perez-Gonzalez – E. Perez-Montero  
C. Pacifici – P. Sanchez-Blazquez – S. Trager  
A. van der Wel – A. Vazdekis



VISTA al night (Credit ESO)

# StePS - Stellar Population Survey

- Mapping galaxy evolution over the past 7 Gyrs

**StePS Ingredients:** high spectral quality - high resolution spectra with wide wavelength coverage of  $lab < 20.5$  selected galaxies in the range  $0.3 < z < 0.7$

**StePS Products:**

- age of the stellar component -
- star-formation activity time-scale -
- metal abundances in stars and gas -
- presence/absence of AGN activity -
- galaxy stellar and dynamical mass -
- presence of gas inflows and outflows

**& Environment information**

# stePS ideal instruments



WEAVE – 0 Vallenari  
WEAVE – 3 Iovino

	WEAVE @ WHT	4MOST @ VISTA
Telescope size	4mt class	4mt class
FoV	3 sq degs	4 sq degs
R @ Low resolution mode	5000	6000
Lambda range	3600 – 9900 AA	3700 – 9500 AA
Multiplexing	1000	1600
Fibers on sky aperture	1".3	1".45

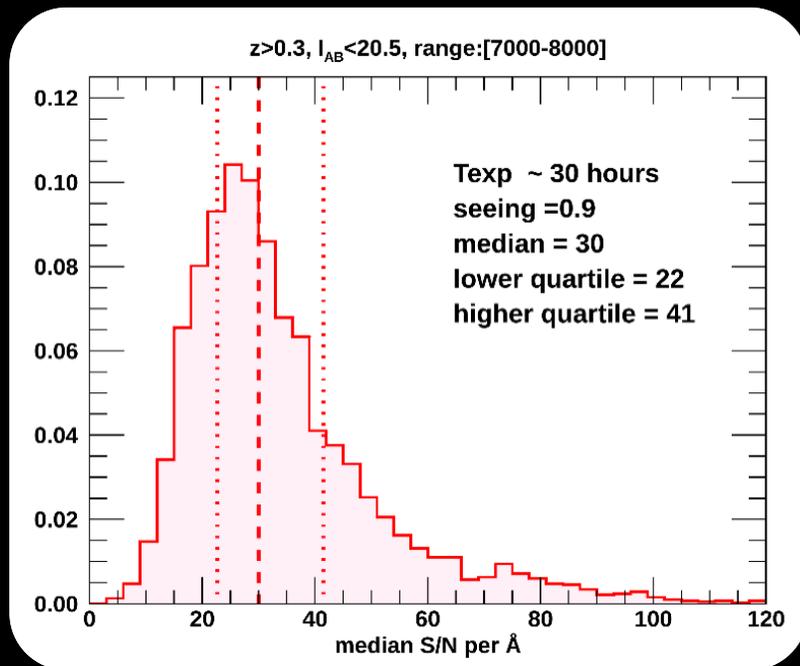
Take a step forward:



- StePS

Higher S/N + High resolution + Wide  $\lambda$  coverage

3.5k spectra @ 30h  $t_{exp}$  –  $0.3 < z < 0.7$  –  $I_{AB} < 20.5$  → median (S/N) ~ 30 in I-band



A LEGA-C like survey at  $0.3 < z < 0.7$

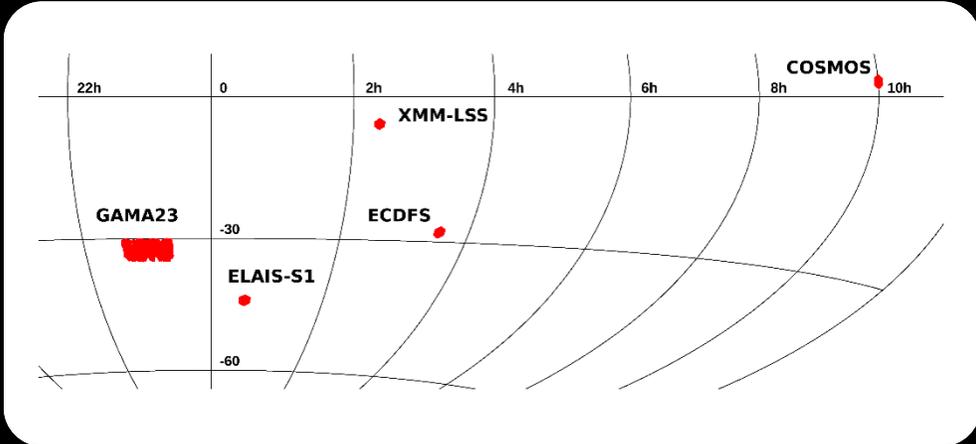
Take a step forward:



- StePS

Higher S/N + High resolution + Wide  $\lambda$  coverage

3.5k spectra @ 30h  $t_{exp}$  -  $0.3 < z < 0.7$  -  $l_{ab} < 20.5$   $\rightarrow$  median (S/N)  $\sim 30$  in I-band



Trading sample size for much higher S/N -

Piggybacking on WAVES-DEEP footprint -

- Take advantage of planned repeated passes

AND

- Get precise information on galaxy position within the cosmic web





## -Steps

### INAF LEADERSHIP

PI: **A. Iovino**

- **23/44 INAF (7 structures)**
- **5/44 INAF associate**
- **TOTAL  $\approx$  3 TI FTE/y in 2022-2023**

**CORE TEAM: A. Gallazzi A. Iovino F. La Barbera M. Longhetti A. Mercurio C. Tortora S. Zibetti**

- **Stellar continuum of galaxies** : **A. Gallazzi** - L. Morelli - **S. Zibetti**
- **U and near UV spectral range** : **F. LaBarbera** - **M. Longhetti** - P. Sanchez-Blazquez
- **Nebular emission lines**: **G. Busarello** - **F. Mannucci** - A. Pasquali
- **Stellar and Dynamical Galaxy Mass**: L. Costantin - **A. Mercurio** - **C. Tortora**
- **Transition galaxies - peculiar objects**: **A. Iovino** - S. McGee - G. Rodighiero
- **Connection with Simulations**: **G. DeLucia** - **F. Fontanot** - **M. Hirschmann** - **B. Vulcani**



## -StePS

- A large interest of a wide group of INAF people working on galaxy evolution
- Leading roles of INAF in all WPs
- Long term survey (5 years)

## CRITICAL ISSUES

- Lot of work is needed to prepare the survey
- Scientific data exploitation will last for many years
- Need of funding opportunities BEFORE scientific data will come (survey planning)
- Need to train young researchers



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