

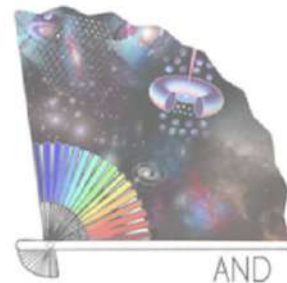
HSC-Niji

– Galaxy evolution and AGN science –

Atsushi J. Nishizawa, Hironao Miyatake and **Federica Tarsitano**
on behalf of the HSC-Niji collaboration

Subaru User's Meeting FY 2026@NAOJ, 2026/06/19



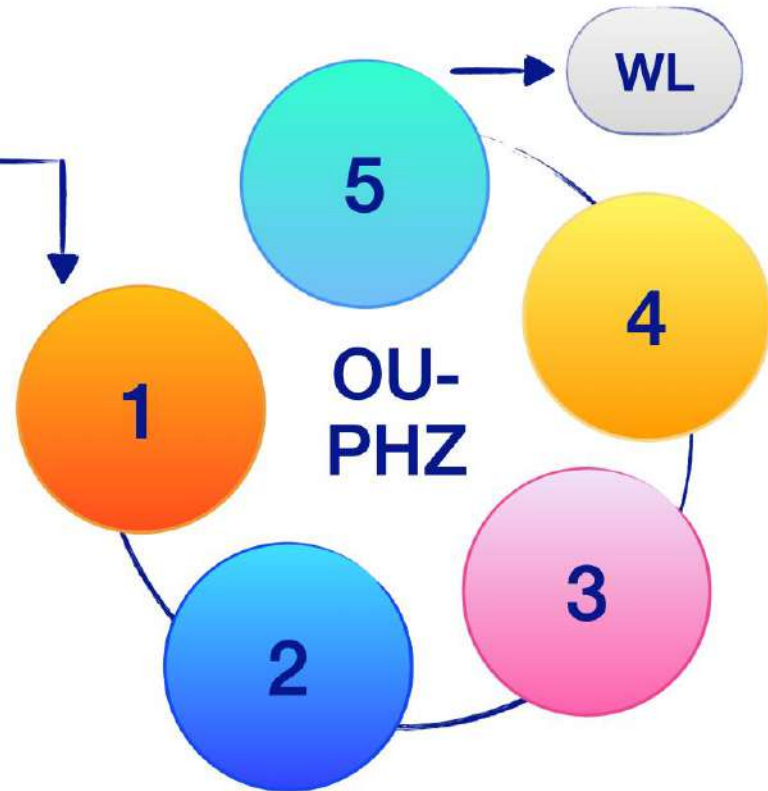


Calibration
dataset:
an example
from Euclid

$$f(\text{input data}) = \{N(z)\}$$

Photo-z

1. Input data
2. Classification
3. Photo-z and SEDs
4. Legacy science products
5. $N(z)$



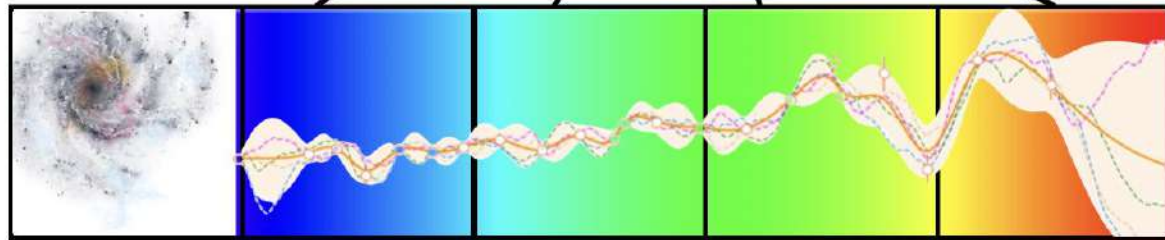
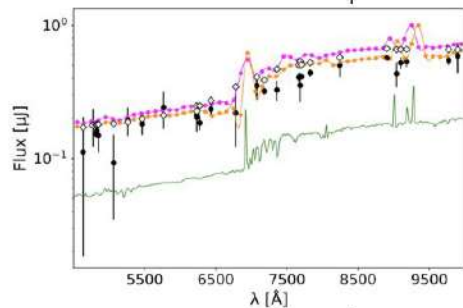
Euclid SED reconstruction

Cropper et al., 2013

$$b \leq 3.5 \times 10^{-4}$$

Physics-driven approach
Template fitting

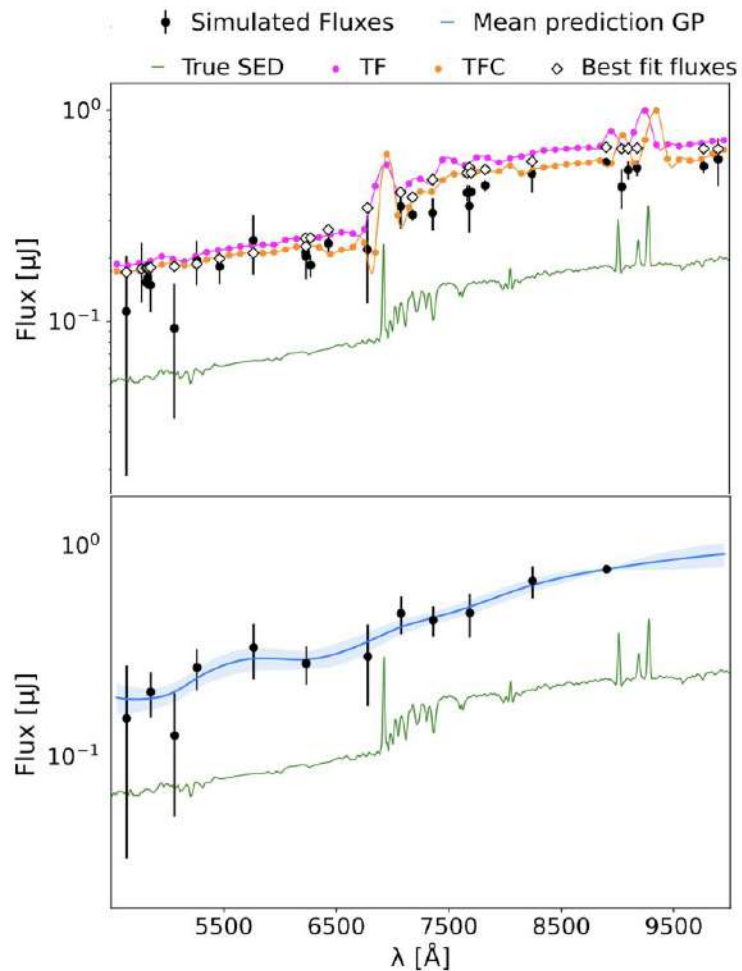
Chromatic PSF



Machine Learning
Gaussian
Processes



Reconstructed
Galaxy SEDs

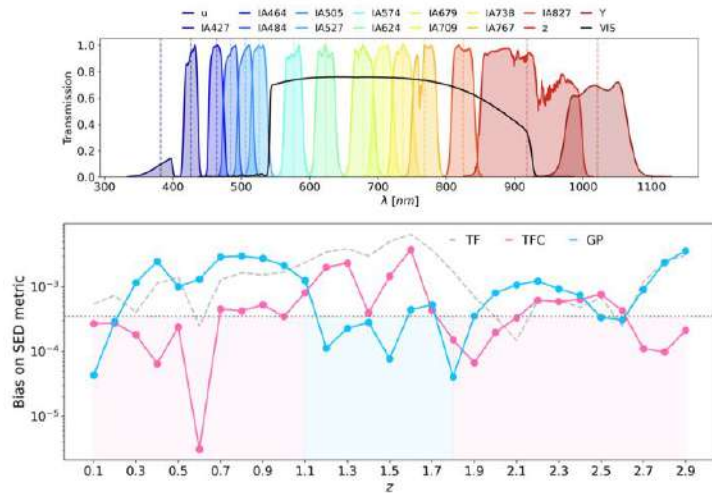


Tarsitano+ 2025, submitted to A&A

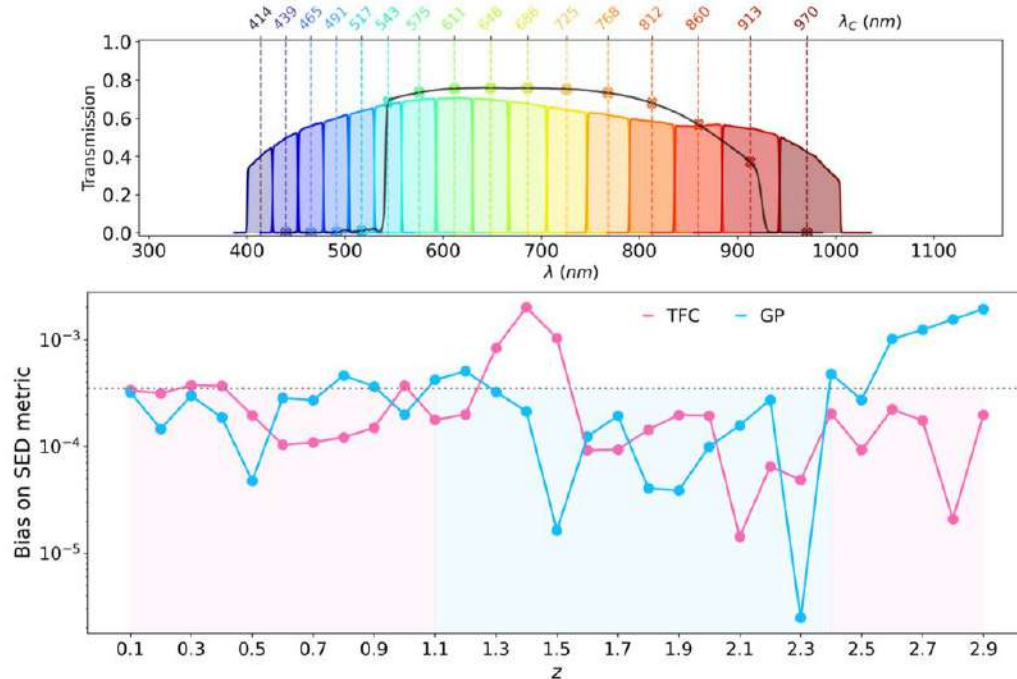


Access Paper

HSC MB for Euclid SED reconstruction

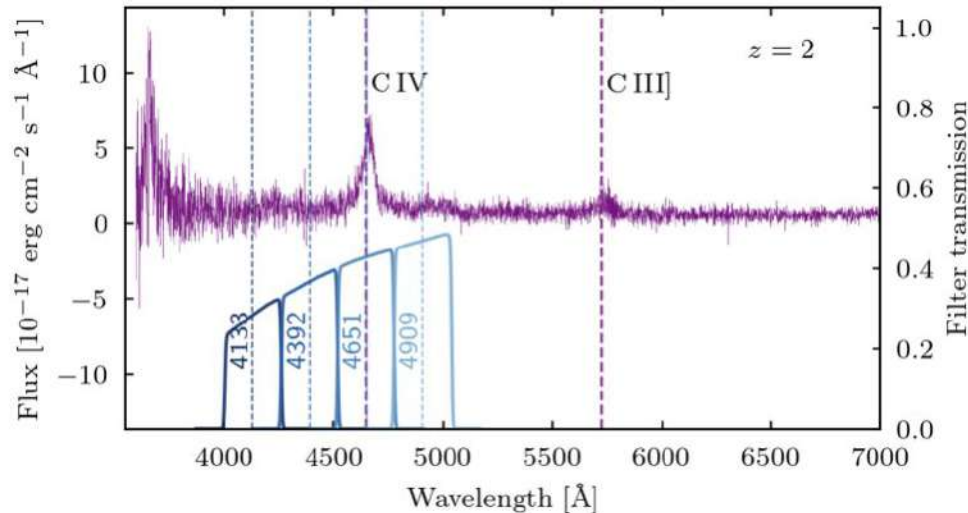


$$\mathcal{M}_\lambda = \frac{\int \lambda T(\lambda) S(\lambda) d\lambda}{\int T(\lambda) S(\lambda) d\lambda}$$

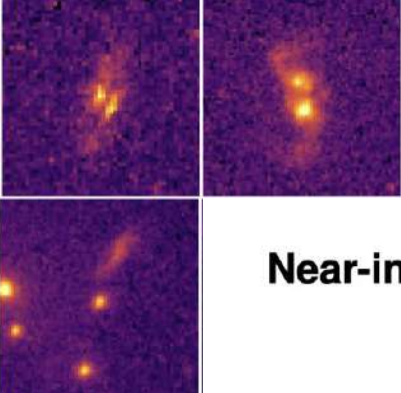


Tarsitano+ 2025, submitted to A&A

- ★ Sample of faint AGN complementary to other surveys (e.g., DESI)
- Dual AGN → to understand BH growth and inform GW measurements
- AGN-host galaxies at cosmic noon
- Connection between environment and AGN activity.



HSC-Niji blue sensitive to
2-3 mag fainter AGN than
DESI, at $z = [0.5, 2, 2]$



Euclid Quick Data Release (Q1)

Extended to the full
AGN catalogue
(Matamoro+2025)

Near-infrared selection and physical properties of dual red quasars

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(Affiliations can be found after the references)



First study of red
quasars selection,
Tarsitano et al., 2025

ABSTRACT

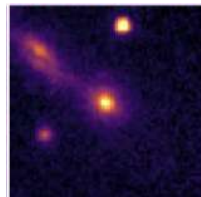
We present a method for identifying dual and multiple red quasar candidates using photometric data based on the computation of the overlap integral between the redshift probability distribution function and their close companions. This probabilistic criterion naturally incorporates photometric uncertainties at associated systems, overcoming the limitations of simple redshift difference cuts. We classify systems in triples based on the number of nearby companions with significant PDZ overlap. We analyze the reds of these systems, and compare them to theoretical expectations for dual AGN formation and the implications with LISA. Our results represent a step forward in constructing large, photometrically selected samples of red QSO systems. We further enhance our classification of red QSO systems using LOFAR radio imaging, which identifies AGN activity. The presence of radio emission associated with one or both peaks allows us to distinguish and gain insights into the duty cycles and feedback mechanisms of red quasars.

Key words. Galaxies: evolution, photometry; Cosmology; Methods: statistical, numerical.



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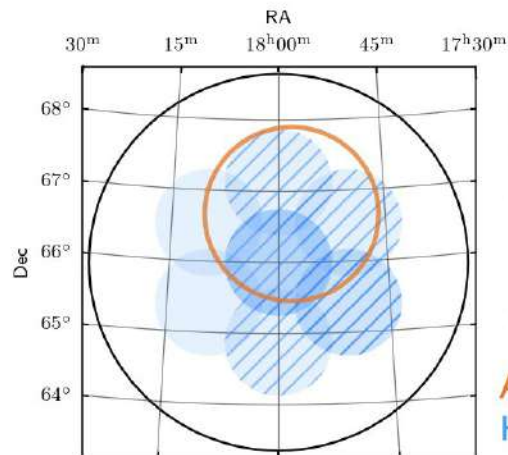
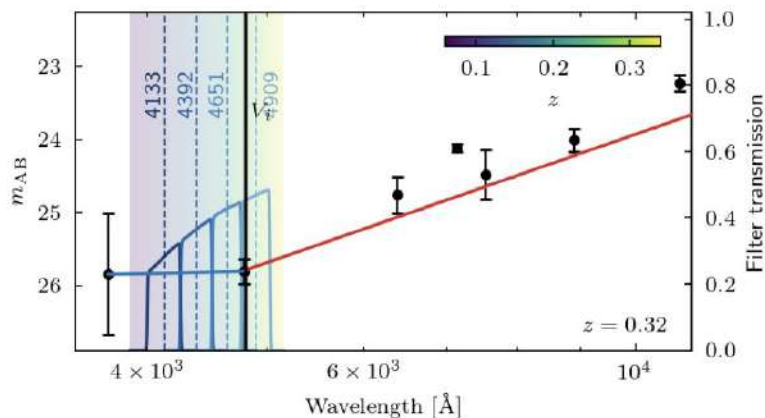
Access Paper



HSC-Niji for local LRD in Euclid

- Previous work: Bisigello+2025 (Euclid Q1) at $z < 4$ and down to $z = 0.6$
- Current works at higher redshift, comparison with JWST, not yet published

Preliminary estimates with HSC-Niji in EDFN:



EDFN, $z < 0.32$ with BB-photometry:

- 84% sources lack sufficient UV sampling
- remaining 16%

AKARI-NEP
H20

$$m_i = -2.5 (\beta + 2) \log_{10} \left(\frac{\lambda_i}{\lambda_{\text{break}}} \right) + c$$

Kocevski-like cut

$$(\beta_{\text{red}} > 0 \text{ and } -2.8 < \beta_{\text{red}} < -0.37)$$

0.19% candidate local LRD
(0.01% if compactness applied)

HSC Medium-band Survey Science Community Workshop

June 29 - July 1, 2026

Nagoya University, Japan

