

# Observing Supernovae with ePESSTO+



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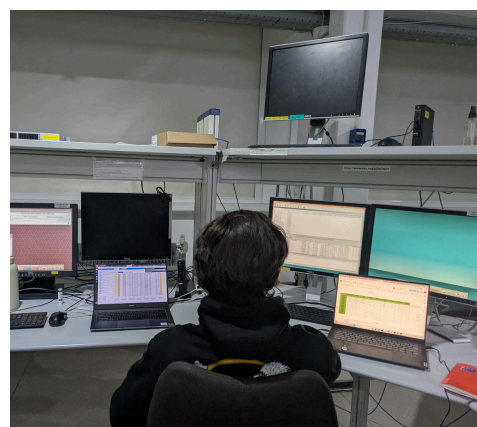
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## Introduction

- In a given night, survey telescopes detect around **100,000 transients**, astronomical events that change in brightness over a relatively short time;
- This number will only increase as more powerful telescopes are developed;
- Early **identification** of interesting objects is crucial to ensure that important data is not missed out on;
- The extended Public ESO Spectroscopic Survey of Transient Objects (ePESSTO+) is a public project which aims to **identify**, **classify** and **follow-up** as many promising transients as possible.

## Equipment

- ePESSTO+ operates out of the New Technology Telescope (NTT) in the European Southern Observatory (ESO) facilities at La Silla, Chile.
- The survey relies on the ESO Faint Object Spectrograph and Camera version 2 (EFOSC2) instrument. This instrument combines **high efficiency** in terms of both **photon count** and **exposure time**.



The NTT in La Silla, Chile (left) and its control room, operated by Gonalo Martins from the Lisbon team (right).

## Transient Classification

- ePESSTO+ has published **~200 papers** and classified **~3000 transients**, including:
  - Supernovae (Type Ia, Ib, Ic and II);
  - Superluminous Supernovae (SLSN);
  - Active Galactic Nuclei (AGN);
  - Tidal Disruption Events (TDE);
- The Lisbon team has classified over **200 transients**.

SN II  
~23%

SN Ia  
~69%

SN Ib/c  
~5%

AGN  
~0.5%

SLSN  
~2%

TDE  
~0.5%

## The ePESSTO+ Pipeline



- The Lisbon team actively participates in all stages of the ePESSTO+ pipeline:

### Feeder Surveys

Feeder surveys scan the sky nightly for changes in luminosity. A detection results in an **alert**.



### TAT

The Target and Alerts Team (TAT) selects promising candidates from the alert stream, prioritizing **young**, **bright** or **exotic** targets.



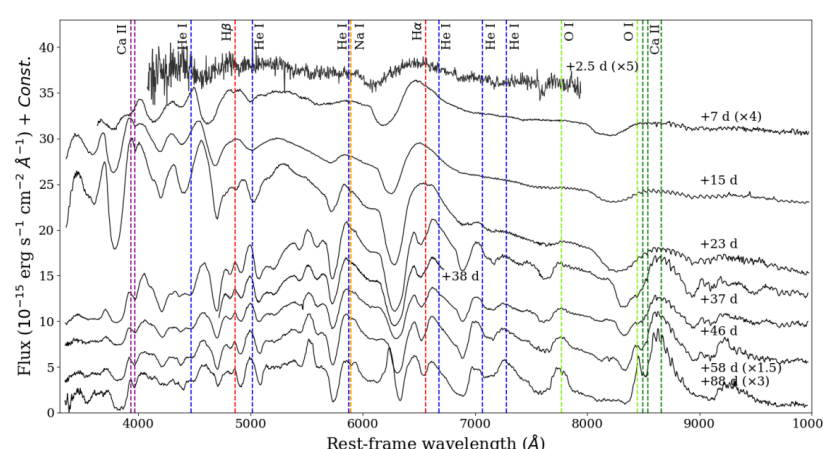
### Observing Team

The Observing Team makes **spectroscopic** observations for suitable targets in the selected pool.



### Support Team

The Support Team **reduces** observed spectra and provides **classifications**, allowing the community to **follow-up** interesting objects;



ePESSTO+ spectra for SN 2024abfo, classified as a IIb supernova. (Reguitti et al. 2025, with J. Duarte)