

# The Evolving Role of AI in Astronomical Spectroscopy and Future Telescopes

*Friday 16 May 2025 12:00 (15 minutes)*

Artificial Intelligence is no longer an emerging technology but a standard tool in modern astronomical spectroscopy. Neural network-based software is integral to the analysis pipelines of major spectroscopic surveys, and machine learning algorithms are widely employed to extract knowledge from the datasets generated by current instruments. Next-generation astronomical facilities will arrive alongside rapid progress in AI technologies like large language models and autonomous agents, creating new opportunities to advance research methodologies.

This talk will provide an overview with concrete examples of the current applications of AI in astronomical spectroscopy, critically assessing both its strengths and limitations. Subsequently, we will discuss the influence of AI on the conception and scientific exploitation of future ground-based telescopes and how investing in the area of AI for Astronomy could help INAF to play a relevant role in the expanding horizon call.

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