Artificial Intelligence to facilitate the study of complex organic molecules in hot cores

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During the process of star formation, a wide variety of molecules can form. The use of ALMA interferometer has made it possible to detect a richness of complex organic molecules (COMs) towards hot cores and hot corinos by studying their rotational transitions. However, the analysis of such spectra is a tedious work and actual technics are not optimal, especially for analyzing a large sample of spectra in a systematic way. Moreover, the amount of data related to these observations has increased considerably in recent years. Therefore, it becomes necessary to develop new tools based on Artificial Intelligence (AI) to automate line detection and identification.

In this context, we set ourselves the challenge of building an appropriate Neural Network architecture. So far, efforts have been focused on signal detection and the identification of molecules to facilitate the analysis of large samples of (sub)millimeter spectra.

This presentation would be the opportunity to discuss how to build a training set and use Neural Network architectures while dealing with data from large programs.