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Convolutional Neural Networks to study Complex Organic Molecules in Radioastronomy

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 to automate line detection and identification. In this context, we set ourselves the challenge of building an appropriate Neural Network architecture that is able to catch the fine details of molecular signature. This presentation would be the opportunity to discuss our first results on the building of CNNs to facilitate the analysis of large samples of (sub)millimeter spectra.

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