Astrostatistics- Astrophysics through Statistics

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Abstract

We have concentrated on application of statistics to astronomy and the development of statistical methods to solve the problems related to the universe, leading us to discoveries of new astrophysical phenomena. We often get data contaminated with noise, affected by outliers or sparsely distributed. In all such situations, the usual statistical methods fail and we need to use their adaption or to introduce new methods as per requirements.

We concentrate on a particular problem on Star formation. Star formation scenario in galaxies of various morphological types is significant in a sense that it characterizes the structure formation in the Universe. But direct measurement of SFRtrue (i.e., True values of SFR) is not at all possible as one has to count stars formed per year in a galaxy accurately. In this work the star formation is investigated by Gaussian Mixture Model Based Clustering technique (GMMBC) to form the clusters of the galaxies (using a large data set of galaxies in the Local Volume (LV)).