Science News & Journal Club Public Talk

时　间：　2017年12月15日 12:15 – 1:45pm

地　点：　紫台仙林园区3号楼402室

Science News：

报 告 人：**何治宏**

Journal Club Public Talk:

报 告 人：**徐国强**

报告题目：**The Global Star Formation Laws of Galaxies from a Radio Continuum Perspective**

报告摘要：

We have examined the relations between the galaxy-averaged surface densities of the various gas components (atomic, molecular, total gas, and dense molecular gas) and SFR in a sample of 181 local galaxies with IR luminosities spanning ~5 orders of magnitude ($10^{7.8}$-$10^{12.3}L_{\odot}$). We have taken a novel approach and used high-resolution radio continuum observations to measure accurately the sizes of the areas of active SF within the galaxies—a key step as it directly affects the inferred gas and SFR surface densities.

The dense molecular gas density Σ_{dense} shows the best correlation with Σ_{SFR}, which is exactly linear with index N=1.01±0.02. Fitting the normal galaxies and (U)LIRGs separately yields the same linear slopes.

Out of these results the following picture emerges. The SF is more directly related to molecular gas than atomic gas.

Unlike the molecular SF law, the linear Σ_{SFR}–Σ_{dense} relation is independent of the choice of sample (thus galaxy luminosity) and the adopted α_{HCN} factor, suggesting the basic units of SF in galaxies are in dense cores.

主要参考文献：ApJ 805, 2015

欢迎大家
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