

30 Years of Photodissociation Regions:

A symposium to honor David Hollenbach's lifetime in science
Asilomar, CA, USA - June 28th to July 3rd, 2015

INVITED TALK

PDRs vs XDRs vs CRDRs vs TDRs

Rowin Meijerink¹

¹ Leiden Observatory, Leiden University, P.O. Box 9513, NL-2300 RA Leiden, Netherlands

E-mail: meijerink@strw.leidenuniv.nl

I will discuss how we can distinguish between P(hoto-)DRs, X(-ray-)DRs (e.g., Meijerink & Spaans, 2005), C(osmic-)R(ay-)DRs (e.g., Meijerink et al. 2011), and T(urbulence-)DRs (e.g., Kazandjian et al. 2012). What are the similarities and differences in the structure and characteristics of these different regions and their observational characteristics? Which are the key tracers for diagnosing and interpreting these different physical mechanisms? Specifically, I will show how the CO ladder of luminous infrared galaxies observed with the Herschel Space Observatory (Rosenberg et al. 2015) can serve as a tracer of XDRs vs PDRs (or shocks) in combination with other tracers such as HCN and HCO⁺ or the [OI] 63 μm and [CII] 158 μm fine-structure lines. I will discuss how these models allow us to characterize the physical properties of the interstellar medium in galactic nuclei (e.g., Rosenberg et al. 2014).

REFERENCES

- Kazandjian, M.V., Meijerink, R., Pelupessy, I., et al. (2012), 542, 65
Meijerink, R., and Spaans, M. (2005), A&A, 436, 397
Meijerink, R., Spaans, M., Loenen, A.F., and van der Werf, P.P.(2011), A&A, 525, 119
Rosenberg, M.J.F., Meijerink, R., Israel, F.P. et al. (2014)
Rosenberg, M.J.F., van der Werf, P.P., Aalto, S., et al. (2015), ApJ, 801, 72