

30 Years of Photodissociation Regions:

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The Evaporation of Circumstellar Disks, PDR Models, and Radiation Fields in Young Star Forming Clusters

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Most stars – and hence most planetary systems – form within stellar clusters, and these background environments can provide a variety of disruptive influences on disks and planets (Adams 2010). This contribution focuses on the role played by cluster radiation fields at various wavelengths, including the FUV (Adams et al. 2006), EUV (Fatuzzo & Adams 2008), and X-ray components (Adams et al. 2012). For each of these wavelengths, we describe the distributions of radiative fluxes produced by the clusters and delivered to their constituent star/disk systems. The FUV radiation field provides the dominant effect and can lead to significant evaporation of the circumstellar disks. The corresponding photoevaporation process due to external FUV radiation involves PDR regions (Adams et al. 2004). The second half of this talk develops photoevaporation models and explores their implications for setting upper limits on disk lifetimes.

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