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Progress Report

FLATTENING OF THE CURVE: DIAGNOSTICS OF THE Hβ AND OPTICAL Fe II EMISSION IN NGC 5548

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We report preliminary results on the analysis of the Hβ and optical Fe II light curves of the type-1 AGN NGC 5548. During a time lapse of over 13 years NGC 5548 showed remarkable changes in continuum flux, accompanied by variations in Hβ flux and EW, and in the Fe II intensity as well. An important aspect of the light curves is the flattening that occurs in the response of Hβ to large continuum flux increase. We attempt the recovery of the observed trends with photoionization using CLOUDY simulations. Using the Locally Optimized Cloud model approach to probe the line luminosity (Hβ and Fe II) as a function of broad-line region covering fraction and cloud density distribution. The analysis required a careful consideration of the spectral energy distribution as a function of continuum luminosity, and of the effect of the line emitting gas column density. This allowed us to constrain the values of the covering fraction, and to reproduce the observed flattening trends.