

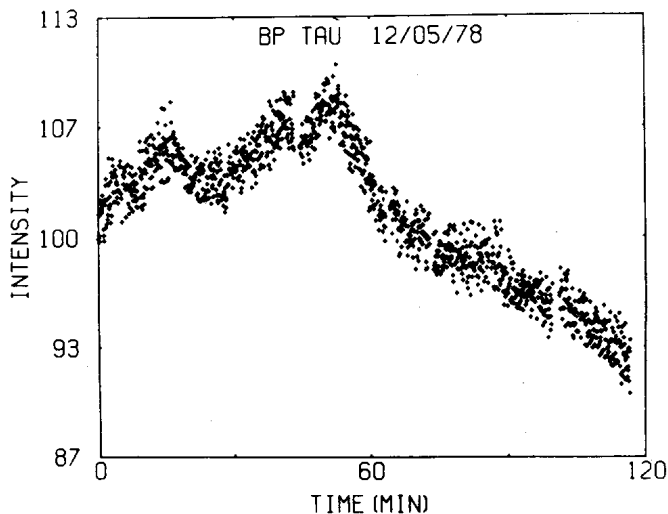
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SHORT TIME SCALE BRIGHTNESS FLUCTUATIONS IN BP TAURI

An investigation of short period brightness fluctuations in T Tauri stars has been under way at the Cloudcroft Observatory since November, 1978. The 1.2 meter f/6.5 Newtonian telescope is equipped with a thermoelectrically cooled FW-130 photomultiplier (S-20 surface) housed in a computer controlled single-channel pulse-counting photometer. Differential Johnson U band magnitudes are being obtained for the brighter T Tauri stars on a nightly basis. In addition, several stars are being observed in a high speed mode, consisting of sequential 5 second U band integrations for durations up to 2 hours. Comparison stars are monitored both before and after a high speed time sequence. The observations of Hopp and Surawski (1979) and Kuan (1976) indicate that T Tauri stars show significant variability on time scales less than half



an hour, and our high speed observations are designed to examine the nature of this rapid variability. We report here on short time scale variability in BP Tauri.

Figure 1 shows our results for BP Tauri, an advanced T Tauri star with a strong ultraviolet excess. Relative U band intensity on an arbitrary scale is plotted versus time for nearly two hours of 5 sec integrations. The start time of this observation was UT 06^h26^m05^s on 05 December 1978. Comparison stars were constant to ± 0.01 mag during similar observations before and after the BP Tauri observation. Figure 1 shows both systematic brightness changes (15 % intensity decrease during second half of observation) and shorter period "flare-ups" with amplitudes of 5 % and characteristic time scales of 10 minutes. These low-amplitude brightenings are consistent with Kuan's (1976) postulated Balmer continuum producing flares.

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