Exposure Guide for Cool Stars

Given the less extensive experience concerning the estimates of proper exposures with the IUE for late-type stars, as compared to early-type ones, we would like to share an approximate exposure algorithm developed for optimal signal-to-noise exposures of the Mg II resonance lines in early K giant stars, even during periods of considerable spacecraft particle noise backgrounds:

For Mg II emission, IWR high dispersion, large aperture, early K giants

\[ T_{\text{min}} \geq 2.3 \left\{ \frac{N}{7500} + 10^{-0.4 (B - 1.24)} \right\} \]

where,

\[ N = \text{DN/hr (background noise)} \geq 10^{\text{FPN}} \]

\[ B = \text{blue photometric magnitude, tested for } 1 > B > 5 \]

This exposure guide can be applied to nearby classes of objects if compensation for flux distribution in the UV and circumstellar or interstellar reddening is made. This seems to include most evolved G, K and M stars, as well as main sequence G and K stars. Mg II was typically exposed to the 205 DN level (including background).

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