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A New Metallicity Calibration for Dwarf Stars with RGU-Photometry

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Abstract: We have adopted the procedure of Carney to obtain a metallicity calibration for dwarfs utilising RGU-photometry. For this purpose we selected 76 dwarfs of different metallicities from Carney and from Strobel et al., and evaluated their δ (U-G) ultra-violet excess relative to the Hyades by transforming UBV magnitudes to RGU via the metallicity dependent equations of Ak-Güngör. The $\delta_{0.6}/\delta$ M normalized factors of Sandage transform δ (U-G) excess at any G-R to $\delta \equiv \delta_{1.08}$, i.e. the ultra-violet excess at G-R = 1.08 mag, corresponding to B-V = 0.60 mag in the UBV-system. Finally, the (δ, [Fe/H]) pairs were shown to be fitted by the equation [Fe/H] = 0.11-2.22 δ-7.95 δ^2. This calibration covers the metallicity interval (-2.20, +0.20) dex.

Key Words: Metallicity -- RGU photometry -- Galactic structure.

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