

[구ST-01] Stellar surface gravity extracted from Wilson-Bappu effect

Sun-kyung Park¹, Wonseok Kang¹, Jeong-Eun Lee¹, Sang-Gak Lee²

¹*School of Space Research, Kyung Hee University*

²*Astronomy Program, Department of Physics and Astronomy, Seoul National University*

Wilson and Bappu (1957) found a significant relationship (WBR) between the absolute magnitude (M_v) and the width of the Ca II K emission line (W) for late type stars. In this study, we revisit the WBR to claim that WBR can be an excellent indicator of stellar surface gravity. We analyze 95 high-resolution spectra of G, K and M type stars obtained with UVES and BOES. WBR found in this work is $M_v = 34.22 - 18.34 \log W$. In addition, stellar atmospheric parameters ($T_{\text{eff}}, \log g, [\text{Fe}/\text{H}], \xi_{\text{tur}}$) are determined with the MOOG code and the Kurucz ATLAS9 model grids for G and K type stars. For M type stars, the method of Belle et al. (1999) is used to derive effective temperature which shows good agreement with other methods. Using the derived T_{eff} and the measured $\log W$, we find the relationship between $\log g$ and $[\log W, \log T]$; $\log g_{\text{fit}} = -25.051 - 5.527 \log W + 10.254 \log T_{\text{eff}}$. This relation can be applied to estimate the surface gravity of M type stars, which is difficult to be determined by other methods.

[구ST-02] The Effects of Nitrogen and Oxygen Abundance Variations on The Evolutionary Tracks of Low-Mass Stars

Chongsam Na^{1,2}, Young-Wook Lee^{1,2}, Sang-il Han^{1,2},

Kiehunn Bach¹, and Yong-Cheol Kim¹

¹*Department of Astronomy, Yonsei University,* ²*Center for Galaxy Evolution Research*

Recent observations show that there are variations in light elements, such as C, N, O, and Na, between the sub-populations in most globular clusters in the Milky Way. In order to investigate their effects on the evolution of stars in globular clusters, we constructed new sets of isochrones and horizontal branch evolutionary tracks under different assumptions as to the abundance of N and O ($[\text{N}/\text{Fe}]$ and $[\text{O}/\text{Fe}]$, respectively). In this talk, we will present our preliminary results from these calculations.