[포IM-05] IGRINS Exposure Time Calculator

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We present the Exposure Time Calculator of IGRINS (Immersion Grating Infrared Spectrograph). The noises of IGRINS and the simulated emission line can be calculated from the combination of Telluric background emission and absorptions, the emission and transmission of the telescope and instrument optics, and the dark noise and the read noise of the infrared arrays. For the atmospheric transmissions, we apply the simulated spectra depending on the Precipitable Water Vapor (PWV) values. In case of calculation of noises, the user needs to input the expected target magnitude, the weather conditions, and the desired exposure time. In addition to the simulated emission line, the parameters of rest wavelength, line-flux, Doppler shift and line-width are needed. The output would be the expected signal-to-noise for each spectral resolution element. The source-code of IGRINS-ETC v2.1.1 is available to be downloaded on the World Wide Web.

[포IM-06] On the origin of the extended horizontal branch and the Sandage period-shift effect in the two metal-poor globular clusters NGC2419 and M15

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Recent spectroscopic observations have provided evidence for complex chemical evolution by supernovae and/or asymptotic giant branch (AGB) stars in the two metal-poor globular clusters (GCs) NGC2419 and M15. In particular, the horizontal branches (HBs) of these metal-poor GCs are very extended in the Hertzsprung-Russell diagram. The origin of these peculiar features, as well as that for the Sandage period-shift effect observed in these clusters, are yet to be understood. Here we show, by constructing population models including the Nitrogen enhanced subpopulation, that the second generation populations in these clusters would be enhanced not only in Helium, but also in Nitrogen. This working hypothesis can simultaneously explain the observed extended feature on the HB and the period-shift of RR Lyrae variables.