Fig. 5.—Comparison of spectra of the inner bulge and outer nucleus of M31 (PA = 55°: nucleus major axis). At the top is the mean spectrum of the bulge outside the nucleus but at radii where $\sigma = 145$ km s$^{-1}$. Below it is the observed spectrum of the outer nucleus and bulge. The third spectrum is the result of subtracting the first from the second, i.e., the spectrum of the outer nucleus by itself. At the bottom is a spectrum of the standard star $\eta$ Cyg (K0 III). The wavelength region shown is 5298–5135 Å; 1 pixel $\approx 1.2$ Å. The lines at pixels 421, 431, and 435 are Mg i b, $\lambda\lambda$ 5183.6, 5172.7, and 5167.3 Å, respectively.
chosen for the blue end of the slit. Figure 1 shows WFPC2 F555W images along the slit position angles at the WFPC2 imaging accuracy of 0.005 arcsec. The total integration time into two exposures of M31's nucleus was 30 minutes.

The nucleus was split into two exposures. Wavelength calibration and the galaxy extinction correction were performed contemporaneously while M31 was observed with the internal G570 and G555M grating arrays. The G750M grating was not affected by G430L data using the final reduced width of 25 (G750M) and 20 (G570M) pixels. We measure the stellar velocities from the red spectrum of M31 7615 from Bower et al. (2001). Internal and external slit setup and data reduction were used. The final reduced velocity range is 7615 ± 200 km s⁻¹. Diffuse stellar velocities are caused by the presence of a large number of stars. Diffuse stars are marked by the red stars because the true stars is much smaller.