

Spectroscopic Research by Using Small to Moderate Aperture Telescopes

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Spectroscopic research are very important for any kinds of space objects if we want to know their real physical and chemical properties. In old time, due to very low efficiency, only the large aperture telescopes can get real usefull spectra of rather bright objects. Now due to high quantum efficiency of CCD camera and high light efficiency optics, it is not a difficult task to get overall light efficiency as high as 0.25 for low spectral resolution instruments and 0.1 for high spectral resolution instruments. So with a 100cm aperture telescope worked on resolving power $R=300$, an integration time of 1 hour, can get good spectrum for an object of $V=20$. If you need $R=3000$, the limiting magnitude still better than $V=17$. Even you need $R=30000$, which is high resolution already, you still can do high $S/N=100$ research for stars brighter than $V=11$. If you limited your research only on some special property such as radial velocity determination of emission line objects survey, you can observe even much fainter objects. For our developing country, we can not easy to pay the large aperture telescopes, but we can have the possibility to build smaller telescope and good spectrographs, then we buy some high quality CCD camera and do our spectroscopic research on rather bright objects. We still can contribute high quality things for modern astrophysics. Here I listed out some very important research fields for spectroscopic research by using 1m class telescopes also.