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The IRAF Fabry-Perot Analysis Package: Ring Fitting

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As introduced at ADASS I, a Fabry-Perot analysis package for IRAF is currently under development as a joint effort of ourselves and Frank Valdes of the IRAF group. Although additional portions of the package have also been implemented, we report here primarily on the development of a robust ring fitting task, useful for fitting the calibration rings obtained in Fabry-Perot observations. The general equation of an ellipse is fit to the shape of the rings, providing information on ring center, ellipticity, and position angle. Such parameters provide valuable information on the wavelength response of the etalon and the geometric stability of the system. Appropriate statistical weighting is applied to the pixels to account for increasing numbers with radius, the Lorentzian cross-section, and uneven illumination. The major problems of incomplete, non-uniform, and multiple rings have been addressed with the final task capable of fitting rings regardless of center, cross-section, or completion. The task requires only minimal user intervention, allowing large numbers of rings to be fit in an extremely automated manner.