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Automating self-calibration - a software solution

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Abstract content
   (Max 300 words)

We present a software application which automates self-calibration of measured magnitudes using existing catalogue data. A pattern-matching algorithm is used to match sources from FITS frames to those listed in a catalogue. Using a standard IRAF coordinate file as input, the algorithm selects the n brightest sources (where n is user-defined) and does the same for the sources in the catalogue which falls within the field-of-view of the FITS frame. All possible triangles are determined for both sets of n sources, and similarly shaped triangles are used to match the input to the catalogue data. The best linear fit between the measured magnitudes and those listed in the catalogue is used to self-calibrate the magnitude of the target source. SMC data captured with the IRSF telescope at SAAO was used to test the software. The process of matching multiple sources from FITS frames to catalogue sources and comparing their magnitudes is better suited to a computer. The automation of this process will result in a drastic decrease in the time required to reduce data in cases where self-calibration is required.

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