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## AutoCal: A Software Application for the Auto Calibration of Stellar Magnitudes

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**Abstract content**   
 (Max 300 words)   
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We present a software application that largely automates the process of auto calibrating stellar magnitudes, where auto calibration refers to the calculation of calibrated magnitudes for sources in crowded fields.

AutoCal uses a pattern-matching algorithm that Edward Groth and Peter Stetson developed around 1985 to match stars on a FITS frame (using a list of frame coordinates and magnitudes as generated by IRAF) to entries of stars in a catalogue covering the same area of sky. A weighted least squares fitting is performed to calculate a linear function that best describes the relationship between the observed and catalogue magnitudes for these stars.

The automation of the matching saves time and decreases the possibility of errors. Additionally, the automated matching can be performed on thousands of stars in a frame.

We present an overview of the software application as well as results obtained for calibrated magnitudes for SXP6.85, a Be/X-ray Binary system in the Small Magellanic Cloud. The data was captured with the IRSF telescope located at the South African Astronomical Observatory during three observing runs spanning December 2007 to December 2010. The results are compared to previously published results and show a good agreement.

**Apply to be considered for a student award (Yes / No)?**

No

**Level for award (Hons, MSc, PhD)?**

N/A

**Would you like to submit a short paper for the Conference Proceedings (Yes / No)?**

Yes

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