The Chandra Multiwavelength Plane (ChaMPlane) Deep Galactic Bulge Survey consists of nearly simultaneous Chandra/ACIS and HST/ACS pointings of three low-n_H windows located at 4°, 2° and 1.5° from the Galactic Center (GC). Using optical colors, we select candidate cataclysmic variables (CVs) to constrain the CV space density in the Bulge. Initial results from the windows 4° and 2° away from the GC indicate that, to first order, the ratio of the CV-to-star space density in the Bulge is consistent with the local value of \( n_{CV} / n_\ast \approx (10^{-5}) \, pc^{-3} / 10^{-1.1} \, pc^{-3} \).

**Survey**

We selected three low-extinction windows in the Bulge as targets for deep Chandra/ACIS observations. Simultaneously, the central regions of the fields were observed with the ACS/WFC/Field Camera on HST. 95% confidence radii on Chandra source positions typically contain several stars. We have to rely on special properties, like H\(_\alpha\)-R color excess, to select likely counterparts.

**Selecting CV candidates**

Candidate CV counterparts are identified based on their optical colors. We select blue, H\(_\alpha\)-excess stars, and H\(_\alpha\)-excess stars with H\(_\alpha\)-R \(- 0.3 \) and larger (corresponding to an H\(_\alpha\) emission line EW \(- 30 \) A for ACS filters and a K-star continuum).

X-ray active m dwarf stars typically do not have such large Halpha-excess emission. An example:

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**Modeling the CV space density distribution**

The Galactic Bulge CV population is poorly constrained, but of importance for understanding the X-ray point source population in the GC region. We model the Galactic CV space density distribution with DISK and BULGE components that follow the stellar distributions (Haisenmeter et al., 1988, PASP 110, 1132) and assume that the ratio of the CV-to-star space density in the Bulge has the local value. We use this to predict the number of CVs we observe in our survey.

**Comparison with our observations**

Using Monte-Carlo simulations we model our efficiency for detecting CVs, adopting the ROSAT CV log \( L_X \) and log \( F_X \)/F\(_{opt} \) distributions. Distances are sampled following the disk and bulge space density distributions of the model (see above).

<table>
<thead>
<tr>
<th>predicted number of CVs in ACS FoV (disk/bulge)</th>
<th>predicted number of CVs observed (disk/bulge)</th>
<th>observed total number of candidate CVs (R mag &lt;24)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BW</td>
<td>2.2 / 53.3</td>
<td>0.62 / 6.7</td>
</tr>
<tr>
<td>SW</td>
<td>9.3 / 141.4</td>
<td>1.1 / 12.6</td>
</tr>
<tr>
<td>LW</td>
<td>20.4 / 220.5</td>
<td>1.2 / 12.6</td>
</tr>
</tbody>
</table>

\* optical detection limit R > 24; 2-8 keV; X-ray detection fluxlimts are \( 2 \times 10^{-17} \) (BW, SW); \( 2 \times 10^{-15} \) (LW) erg s\(^{-1}\) cm\(^{-2}\) (averaged over ACS FoV) for 10 keV thermal bremsstrahlung; incompleteness due to our H\(_\alpha\)-excess selection criterion (H\(_\alpha\)-R \(- 0.3 \)) is not accounted for.

**Conclusions**

Our simple model for the Galactic CV distribution predicts a number of observed CVs comparable to the number of CV candidates actually observed. It is consistent with a relative (to main-sequence stars) CV space density in the Bulge similar to the local value, but uncertainties remain in the distributions of CV X-ray properties (luminosity, X-ray/optical flux ratio), the model for the Bulge profile, and our optical completeness corrections.