Joseph M. DePasquale

Professional Experience

IT Specialist / Visualization Specialist
Chandra X-ray Observatory, EPO, *Smithsonian Astrophysical Observatory* **Aug 2009–Present**

- Prepare press materials for biweekly Chandra press releases, including all imagery derived from telescope data, using Adobe Photoshop and PixInsight, frequently interacting directly with scientists to find the best possible representation of their data. Chandra press releases often involve the processing of data from multiple observatories to create multi-wavelength composite images.
- Maintain internal web pages for review of pre-release press materials.
- Prepare supporting materials for press releases, including the composing and editing of biweekly, two-to-three-minute-long video podcasts in Adobe AfterEffects that summarize the results of a press release.
- Incorporate astronomically relevant metadata into image files using the Astronomy Visualization Metadata (AVM) standard, leveraging the power of Adobe's XMP format.
- Led an effort to update the entire Chandra press image archive with astronomically relevant metadata. This was a multi-year project that also involved the hiring and managing of a summer intern. All Chandra press images (nearly 2,000 images) from 1999 to the present are now fully AVM compliant.
- Developed and continue to maintain an interactive outreach web tool, Chandra SkyMap, utilizing the JavaScript D3 library, which provides users with an immersive all-sky map of all Chandra press release imagery to date.
- Wrote and maintain a detailed online tutorial, "OpenFITS," designed to teach users how to process real data from the Chandra observatory to create their own astronomical images, distilling a complex procedure into understandable steps for the general public.
- Routinely organize and provide guided tours of the Harvard-Smithsonian Center for Astrophysics for diverse groups of all ages.
- Participated in the SAO's WorldWide Telescope Ambassadors program, which used Microsoft's WorldWide Telescope to augment science education in several Boston-area grade school classrooms.
- Wrote several blog posts for the Chandra blog on the topics of image processing and metadata.
- Spoke on behalf of the SAO's MicroObservatory program at the Smithsonian Latino Center's Young Ambassadors Program in 2012 and again for the Smithsonian Education's online video conference series for students and educators regarding astronomical image processing.
- Designed and built web sites and logos for various research groups within SAO.
- Designed and maintain a self-managed MacPro machine that includes custom hardware and robust backup solutions.
- Traveled to speak about astronomical image processing at outreach events in New England and beyond at amateur astronomy clubs, schools, and the NorthEast Astro Imaging Conference.

IT Specialist
Chandra X-ray Observatory, ACIS Operations, *Smithsonian Astrophysical Observatory* **Aug 2001–Aug 2009**

- Developed and maintained real-time telemetry monitoring software, including dynamic web page creation through PERL CGI, as well as spacecraft hardware health and safety limit monitoring capable of autonomously alerting team members.
- Attended conferences and contributed vital analyses to the International Astronomical Consortium for High Energy Calibration, a cross-calibration effort among several X-ray and high-energy observatories.
- Interacted with the Chandra user community through the coordination of roughly 65–70 guest observer observations characterized as "Normal Galaxies" for each Chandra observing cycle under the User Support Uplink Interface (USINT) program.

Teaching Fellow, *Department of Astronomy, Harvard University* **Spring Term 2002 / Fall Term 2004**

- Assistant taught "Celestial Navigation" with Professor Phil Sadler, using the StarLab portable planetarium as a major component of class instruction.

Planetarium Operator, *Franklin Institute Science Museum, Philadelphia, PA* **Sept 1998–Jul 2001**

Telescope Operator, *Department of Astronomy & Astrophysics, Villanova University* **Sept 1997–May 1998**

Systems Experience & Proficiencies

Mac OS X, Unix, Linux, Microsoft Windows , Sun Microsystems Solaris OS
Adobe Suite (Photoshop, Illustrator, AfterEffects, Dreamweaver, InDesign), PixInsight, Python, JavaScript (including D3, jquery, flot), PERL, CGI, IDL, MATLAB, C++, C, Unix shell scripting, FORTRAN, HTML, CSS, CIAO, XMM SAS, XSPEC, MicroObservatory Image, Mac iLife, Microsoft Office Suite

Education & Training

Master of Liberal Arts, Digital Media Design (Expected May 2018), Harvard Extension School, Cambridge, MA

Bachelor of Science in Astronomy & Astrophysics, Minor in Physics (2001), Villanova University, Villanova, PA

Additional Training

- *Summer School in Statistics for Astronomers*, Penn State University, (2009)
- *Radiative Processes In Astrophysics,* Astro 150, Harvard University (2007)
- *National Virtual Observatory Summer School,* US National Virtual Observatory, (2006)
- *Intermediate Programming with IDL,* Research Systems, Inc. (2004)
- *Data Munging in PERL*, Sysarch, Inc. (2003)
- *Quantum Mechanics,* Phys 143a, Harvard University (Fall 2002)
- *X-ray Astronomy School*, Smithsonian Astrophysical Observatory (2002)
- *CCD and CMOS Imaging Sensors and Applications*, SPIE Short Course (2002)

Awards

Smithsonian Special Act Awards 2002–2008—Awarded for superior accomplishment in characterizing the Chandra ACIS thermal environment, for calibration analyses leading to the discovery of corrupted calibration files, and for implementing streamlined and robust limit monitoring software.

NASA Group Achievement Award 2003—Awarded for outstanding service and dedication provided in effectively and efficiently scheduling the science mission observations of Chandra.

NASA Group Achievement Award 2003—Awarded for outstanding achievement in identifying, addressing, and mitigating the ACIS CTI effect on Chandra.

Select Publications

- DePasquale, J.; Arcand, K.; Edmonds, P. (2015) *High Energy Vision: Processing X-rays*, Studies in Media and Communication 3, 2; arXiv:1509.07753
- Arcand, K.; Watzke, M.; Rector, T.; Levay, Z.; DePasquale, J.; Smarr, O. (2013). *Processing Color in Astronomical Imagery,* Studies in Media and Communication 1, 2; arXiv:1308.5237
- Plucinsky, P. P.; Haberl, F.; Dewey, D.; Beardmore, A. P.; DePasquale, J. M.; et al. (2008) *The SMC SNR 1E0102.2-7219 as a calibration standard for x-ray astronomy in the 0.3-2.5 keV bandpass*. SPIE 7011 70112E
- DePasquale, J., Plucinsky, P., Schwartz, D., (2006). *A historical fluence analysis of the radiation environment of the Chandra X-ray Observatory and implications for continued radiation monitoring*. SPIE 6270 62701J
- DePasquale, J. M.; Virani, S. N.; Plucinsky, P. P., (2002). *Optimizing the efficiency of command load inspection for the Advanced CCD Imaging Spectrometer (ACIS) on the Chandra X-ray Telescope.* SPIE 4844 454
- DePasquale, J.; Sion, E. M. (2001*). Chemical Abundances of the Magnetic White Dwarf During the Low States of the Polar AM Herculis*. ApJ, 557, 978