From: "Claude Bertout" <claude.bertout@obspm.fr>
Subject: **RE: Astronomical software articles in A&A**
Date: 2010 October 21 10:28:29 GMT+01:00
To: "'Norman Gray'" <norman@astro.gla.ac.uk>
Cc: "'Paris Editorial Office'" <aanda.paris@obspm.fr>, "'Claude Bertout'" <claude.bertout@obspm.fr>
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1 Attachment, 27.4 KB

Dear Colleague,

Thank you for your interest in A&A. At the urge of many colleagues we opened in 2006 the "Astronomical instrumentation" section of the Journal to a much wider variety of topics than previously. Its scope is explained in an editorial that I attach to this mail for your convenience. We publish in this section in particular "ground-breaking data processing and mining methods". Even more recently, we opened a new section devoted to "numerical methods and codes" that was initially intended for heavy theoretical codes but is also open to more applied tools. Papers submitted for these sections are peer-reviewed in the same demanding way as any other paper submitted to A&A, and articles published in both sections benefit from worldwide open access at no extra cost for the authors.

A major criterion that is used by A&A editors to judge whether a submitted paper can be considered for publication, besides its scientific quality, is that it should be "of interest to a sizable fraction of the A&A audience". I tried to apply our criteria to the abstracts you sent me and came up with the following comments.

>> Article 1 -- software implementation of scientific algorithms
>>
>> Mixing Bayesian Techniques for Effective Real-time Classification of
>> Astronomical Transients
>>
>> With the recent advent of time domain astronomy through various
> surveys
>> several approaches at classification of transients are being tried.
> Choosing
>> relatively interesting and rarer transients for follow-up is important
> since
>> following all transients being detected per night is not possible
> given the
>> limited resources available. In addition, the classification needs to
> be
>> carried out using minimal number of observations available in order to
> catch
>> some of the more interesting objects. We present details on two such
>> classification methods: (1) using Bayesian networks with colors and
>> contextual information, and (2) using Gaussian Process Regression and
>> lightcurves. Both can be carried out in real-time and from a very
> small
>> number of epochs. In order to improve classification i.e. narrow down
> number
>> of competing classes, it is important to combine as many different
>> classifiers as possible. We show how this can be incorporated in a
> higher
>> order fusion network and tied with optimal follow-up.

If a real world application is discussed as part of the paper to prove the validity of the approach, this article would definitely be considered for publication in the astronomical instrumentation section of A&A

>> Article 2 -- application progress report
>>
>> WorldWide Telescope: A system of components enabling institutions to
> create
>> rich web based data access and visualization tools.
>>
>> WorldWide Telescope has grown from a standalone visualization platform
> to a

>> rich set of components that can utilized by portals, data providers or
>> research projects to allow rich data access to both catalog and image
> data.
>> The WWT Client also provides SAMP enabled interoperability allow a
> suite of
>> data services across client, web and server.

This is probably not acceptable for A&A because it sounds, from the abstract, like the announcement of a software facility rather than the description of the underlying algorithms. I should add that the way A&A should deal with VO tools descriptions will be a major topic of discussion during our next editorial meeting in early 2011.

>> ----
>> Article 3 -- pipeline features and recent developments
>>
>> SIMPLE Imaging and Mosaicking PipeLinE
>>
>> The SIMPLE Imaging and Mosaicking PipeLinE (SIMPLE) is an IDL based
> data
>> reduction environment designed for processing optical and near-IR data
>> obtained from wide-field mosaic cameras. It has standard functions for
> flat
>> fielding, sky subtraction, distortion correction, and photometric and
>> astrometric calibrations. One of the key features of SIMPLE is the
> ability
>> to correct for image distortion from a set of dithered exposures,
> without
>> relying on any external information (e.g., distortion function of the
>> optics, or an external astrometric catalog). This is achieved by
> deriving
>> the first-order derivatives of the distortion function directly out of
> the
>> dithered images. This greatly help to produce high accuracy on
> astrometry as
>> well as preserve image sharpness in the mosaicked/stacked image.
> Despite
>> being designed toward a general reduction environment, the current
>> distribution of SIMPLE has two highly optimized packages, one for the
>> Wide-field InfraRed Camera on the Canada-France-Hawaii Telescope and
> the
>> other for the Multi-Object InfraRed Camera and Spectrograph on the
> Subaru
>> Telescope. SIMPLE has produced excellent (photometrically and
>> astrometrically) wide-field images from both cameras. Users and the
> author
>> of SIMPLE are also developing optimized SIMPLE pipelines for other
> mosaic
>> cameras such as the Subaru Prime Focus Camera.

This is probably a borderline case for us. If the article is user-guide-like, we won't consider it for publication. If, on the other hand, it describes the underlying algorithms, we will consider it for the data reduction section since the interested community is large.

>> ----
>> Article 4 -- application of general computing technologies to
> astronomy
>>
>> Java and High performance computing in Gaia processing.
>>
>> In recent years Java has matured to a stable easy-to-use language with
> the
>> flexibility of an interpreter (for reflection etc.) but the
> performance and
>> type checking of a compiled language. When we started using Java for
>> astronomical applications around 1999 they were the first of their
> kind in
>> Astronomy. Now a great deal of Astronomy software is written in Java
> as are

> > many Business applications. We discuss the current environment and trends concerning the language and present an actual example of scientific use of Java for high-performance computing: ESA's mission Gaia. The Gaia scanning satellite will perform a galactic census of about 1000 million objects in our galaxy. The Gaia community has chosen to write its processing software in Java. We explore the manifold reasons for choosing Java for this large science collaboration including recent sucess using the Amazon Cloud for AGIS.

This is definitely not for A&A but rather for a journal in computer science.

> > ----
> > Article 5 -- development and use of astronomy-specific 'infrastructure'
> >
> > Another way to explore the sky: HEALPix usage in Aladin full sky mode
> >
> > The last few years have seen the emergence of a new feature in several astronomical visualization tools : the interactive sky browser supporting immediate panning and zooming. World Wind, Google Sky, World Wide Telescope, Wikisky, Virgo and now Aladin, all these tools have in common a view of the sky based on a hierarchical multi-resolution sky tessellation. The aim is to load and draw the good "pieces" of the sky at the good od resolution as fast as possible, according to the current user sky view. The goal is the same but sky indexing solutions differ significantly and do not offer the same capabilities in term of performances, underlying data base complexity, available projections, projection distortion, pixel value access, graphical overlays, etc. Actually, most of the tools offer false-colour skies with a unique simple projection. But this new feature can be used not only for providing a sky background, but also for accessing and analyzing pixel data in the same way that astronomers commonly use FITS images for doing science.
> > In this talk, we will present how Aladin is using an HEALPix sky tessellation for building a powerful sky data base. We will present the arguments in favor of HEALPix, notably: - The intrinsic qualities of HEALPix for implementing fast pixel algorithms such as convolutions, Fourier analysis, wavelet decomposition, nearest neighbor searches, topological analyses... - The hierarchical structure of the sky directly mapped in a simple directory tree, allowing immediate usage for local data; - The projection methods for reducing as much as possible the distortions notably at poles and at the "sky borders"; - The available le libraries, and especially the Java package supporting deep sky resolution; - Last but not least, the direct usage for current mission data such as Planck; - etc. We will also discuss about the compatibility/interoperability between all these tools and how we could avoid to duplicate these data bases and implement

> efficient
>> collaboration. This might open the door to a future VO standard
>
> describing
>> this new way to explore the sky.

This looks like another borderline case for us. The article could perhaps be shaped in a way that would make it able to enter the A&A code section. Alternatively, we could ask the authors to wait until the VO standard is defined and then submit for publication the description of that standard.

I hope these comments will help.

With best wishes,

Claude Bertout
A&A Editor in Chief

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Astronomy
&
Astrophysics

Editorial

New A&A editorial policy for papers about instrumentation

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ABSTRACT

Astronomy & Astrophysics introduces a new editorial policy for papers submitted to Section 13 (Astronomical Instrumentation).

Key words. editorials

In their research, astronomers rely heavily on new, cutting-edge instruments that make their exciting discoveries possible. The design and construction of instrumentation for ground-based and space telescopes is thus an essential astronomical activity, which includes, besides the instrumental developments themselves, *(i)* the testing of promising new sites for telescope deployment, *(ii)* the specific observational procedures and scientific preparatory studies needed to operate the instrumentation in the most efficient way, *(iii)* the calibration that translates the measurements into physical units, thus permitting a comparison of results obtained by different instruments, *(iv)* the data processing procedures tailored to the new instruments, and *(v)* the tools allowing for optimal inter-operability of archived data.

Recognizing the importance of state-of-the-art instrumentation, the A&A Board of Directors has decided to develop the corresponding journal section, thus aiming at making A&A a reference journal also for astronomers whose main interest is instrumentation. We therefore introduce hereby the new editorial policy concerning these papers. In Section 13, we will now publish papers that describe

- new concepts and ideas that might lead to actual future instruments,
- crucial instrumental developments in ongoing ground-based or space projects,
- studies that are essential to the preparation of large instrumental projects,
- ground-breaking data processing and mining methods,

provided these works report a significant advance on current capabilities and are of interest to a sizable fraction of the community.

Compared to our previous editorial policy for Section 13, the main change is that we no longer request that papers describing instruments and related studies also present astronomical results.

The peer-review policy for Section 13 papers will remain the same as previously. Referees with strong instrumental background will be requested to scrutinize the submitted manuscripts to ensure the highest possible level of scientific merit for those works that will be accepted for publication. Authors will be expected to write their papers with the large audience of A&A in mind rather than for a small group of specialists alone.

In order to implement the new editorial policy in a consistent manner, a single Associate Editor will have responsibility for all papers submitted for Section 13.

Following a trend started with A&A Section 14 (Online catalogs and data), Section 13 will be published mainly online. The first page of Section 13 papers, comprising the title, author names and affiliations, and abstract, will be printed. The electronic edition of the journal, which is now the reference version of A&A since the printed edition is no longer complete, will contain the full papers and nothing will distinguish online papers from printed ones in this electronic edition. All A&A papers are, of course, referenced in the Smithsonian/NASA *Astrophysics Data System* (ADS) and other preprint servers.

Our publisher EDP Sciences has kindly agreed to provide open access to Section 13 articles to promote the instrumental section. In 2007, instrumental articles published in A&A will thus be accessible to everyone at no cost.

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