DIGITAL IMAGE PROCESSING AND DATA RETRIEVAL : THE NEEDS

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During the last decenny, Digital Image Processing (D.I.P.) has been introduced in astronomical studies to allow the information extraction.

In a first step, D.I.P. has been used essentially to provide enhanced images (noise reduction, deconvolution, contrast enhancement), to reduce geometrical or photometrical distorsions and to extract rough data. So, a few reference date are needed (some comparison lines for example).

As the D.I.P. allows us to fit all kinds of images with a model, an important software has been developed to obtain values of positions, magnitude, diameter, equivalent width, radial velocity... But to transform rough data provided by the adjustments into intrinsic astrophysical quantities, we need to introduce some data from catalogues, tables...

In the case of spectrography, there is generally no difficulty to identify comparison lines, but it arrives in our center that some difficulties arise from the nature of the spectral comparison source, the wavelength field... At present it is the user who identifies these lines, but a catalogue of good comparison lines according to the set of conditions (spectrograph, lamp, exposure) is a first need for D.I.P.

If we use some well-known tables to identify stellar lines (Solar spectrum, Moore tables ...) a second need for D.I.P. lies in a catalogue of lines according to the spectral type, allowing us to extract, for a defined dispersion and wavelength field, the lines corresponding to the star studied, leading to interactive or automatical identification. A similar need exists for spectra of nebulae or galaxies.

To allow us to go further in data reduction, catalogues of data provided by models, can be built.

For direct photography, the use of the C.S.I. and the data provided by the Strasbourg Stellar Data Center allows us to do direct astrometric

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reductions. Difficulties arise however with photometric reductions. In the great majority of the cases, we have to search in the literature the references concerning photometric sequences in the field. This is due to the fact that the stars contained in the C.S.I. must have known equatorial coordinates,whereas in the majority of the cases, the stars of known magnitudes are found on charts, which cannot be directly used in the computer. So an important need lies in building a catalogue of astronomical fields. We divide the celestial sphere into pre-defined squares. Each square will constitute a field. Into each of them we introduce the interesting information : known stars (astrometry, photometry, spectrography, variables, double stars...), known non-stellar objects (clusters, nebulae, planetary nebulae, galaxies, clusters of galaxies), I.R., UV, X and γ ray objects, radio observations. Instead of the C.S.I., in which we have objects with coordinates, objects would be introduced by references to related papers ; some data (positions, magnitudes, variations,...) would accompany this information.

Such a catalogue could be a major tool in D.I.P. principally for Schmidt plates and prime focus photography.

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