FITS and ds9

We use and thank this course http://www.faculty.virginia.edu/ASTR5110/ We will use the practical, but other info are present (e.g., lectures).

Look at http://www.faculty.virginia.edu/ASTR5110/assignments.html

Praticum 4, takes NOTES (pdf) and the whole directory for test images (.fits)

READ/USE astr5110_practical4_v4.4.pdf   – 1st PART about FITS

Ex. of a datacube: search in google for galaxy kinematics 3D visualize velocity field, e.g. p.5 of http://www.astro.wisc.edu/~mab/education/astro330/lectures/lecture_12.f10.pdf

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READ   something   about   the   images   processing,   at http://spacetelescope.org/projects/fits_liberator/improc/

READ/USE astr5110_practical4_v4.4.pdf   – 1st PART about DS9

ds9 is already installed in lab-info!!! start with

mkdir fitsds9

cd fitsds9

/opt/scisoft/bin/ds9 &

Astrophysics: acknowledgement: Wikipedia *** M17 Omega Nebula HII regionThe color of the Omega Nebula is reddish, with some graduation to pink. This color comes from the hot hydrogen gas which is excited to shine by the hottest stars which have just formed within the nebula. However, the brightest region is actually of white color, not overexposed as one might think. This phenomenon is apparently a result of a mixture of emission light from the hottest gas, together with reflections of the bright star light from the dust in this region. *** The Whirlpool Galaxy, also known as Messier 51a, M51a, or NGC 5194, is an interacting[7] grand-design[8] spiral galaxy. *** The Pinwheel Galaxy (also known as Messier 101, M101 or NGC 5457) is a face-on spiral galaxy distanced 21 million light-years (six megaparsecs)[3] away in the constellation Ursa Major,

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USE DS9 ON OTHER INTERESTING EXAMPLE OF FITS

http://chandra.harvard.edu/photo/openFITS/

from Create a Multiwavelength Composite Image using GIMP with M101

take M101 M101 X-ray (Chandra) M101 Ultraviolet (GALEX) M101 Optical (Hubble) M101 Infrared (Spitzer)

astrophysics of M101: optical: stars,   xray: binaries or SN- old stars, e.g. accretion of matter on white dwarf, neutron star, black hole   uv: young stars=SF, ir (if Spitzer MIPS)=dust

HOMEWORK ON FITS & DS9

EX 1. In http://chandra.harvard.edu/photo/openFITS/ Access to additional Datasets Multiwavelength Data

Select one obj, try to recostruct it (with 3 bands only, I want a .jpg or .ps file), but above all, look for the scientific explanation of data in these 3 different bands (as made above, 1-2 lines).

EX 2. WITH IMAGES.fits given by the teacher

Astrophysics: EM0922B.fits EM0922R.fits are two WFC@INT images of a region with a strange, huge radiosource in the middle region of several clusters (maybe on a filament of the large scale structure).

Which image has (partially) a wrong astrometry?...cfr with images that you know are reliable...Which image is the deepest, i.e. reach the fainter mag? Do you note somehing of strange in stars?

EX 3. A523_X.FITS is an old Rosat X-ray image (already smoothed) of the galaxy cluster Abell 523...take an optical image from DSS2 red. Prepare an optical image + X-ray image (for the second make contours!)

Astrophysics: look at the galaxy vs. gas distribution. Do you note something of strange?

A523evt2_1532_soft.fits.gz is a Chandra X-ray image, in this you see the result before smoothing...look at the Scale