

**Tutorial Report
for Optical Image Analysis Processing**

Set of 10 images used during the tutorial

IM_20100918_080533594_000001_35478102.fits = IMAGE1
IM_20100918_080851016_000001_35478102.fits = IMAGE2
IM_20100918_081208960_000001_35478102.fits = IMAGE3
IM_20100918_081527585_000001_35478102.fits = IMAGE4
IM_20100919_075455096_000001_35478202.fits = IMAGE5
IM_20100919_075813065_000001_35478202.fits = IMAGE6
IM_20100919_080130941_000001_35478202.fits = IMAGE7
IM_20100920_075056731_000001_35477902.fits = IMAGE8
IM_20100920_075414653_000001_35477902.fits = IMAGE9
IM_20100920_075732521_000001_35477902.fits = IMAGE10

Step 2) Final setting for SExtractor Configuration File

MAG.ZEROPOINT: _____, GAIN: _____, PIXEL_SCALE: _____,SEEING_FWHM: _____,
BACK_SIZE: _____

Step 3) Image Characterization

Table 1 – Observation Time Schedule, Magnitude Zeropoint and Limiting Magnitude

Image Name	Observation Date	GPS Time	Time Delay from GW-trigger (sec)	Zeropoint	Limiting Magnitude
IMAGE1					
IMAGE2					
IMAGE3					
IMAGE4					
IMAGE5					
IMAGE6					
IMAGE7					
IMAGE8					
IMAGE9					
IMAGE10					

The “mean zeropoint” for all the images is: _____

Step 4) Catalog-based Detection Pipeline by LIGO/Virgo

Number of “Unknown Objects” in common to all the images in FOV: _____

Number of “Unknown Objects” in common to all the images in restricted-FOV: _____

Number of galaxies within _____ in FOV: _____

Number of galaxies within _____ in restricted-FOV: _____

Number of Potential Transients in On-source Region: _____

Number of Optical Transient GW counterpart in On-source: _____

Table 2 – Galaxies within the LIGO/Virgo horizon

Galaxy Name	RA(J2000)	Dec(J2000)	Major Diameter (arcmin)

Table 3 – Optical Transient GW Counterparts

Transient Number	RA(J2000)	Dec(J2000)	Magnitude First Image	Magnitude Last Image	Slope Index

Step 5) Optical Transient Models

Indicate the type of EM counterpart that could be visible with present images taking into account the galaxy distances:

- LONG/SOFT GRB:
 - Faintest: -----
 - Brightest: -----
- SHORT/HARD GRB:
 - Faintest: -----
 - Brightest: -----
- Kilonova Objects: -----

Step 6) DS9 - Magnitude from Counts in user-defined regions

SOURCE_REGION_COUNTS(ADU):----- AREA(pixel)-----

BKG_REGION_COUNTS(ADU):----- AREA(pixel)-----

NET_SOURCE_COUNTS:-----

RED_MAGNITUDE:-----

Step 7) Intrinsic Properties of the Optical Transient GW Counterparts

Table 4 – Optical Transient GW Counterparts

Transient Number	Absolute Magnitude	Absolute Magnitude First Image	Offset from galaxy center (Kpc)