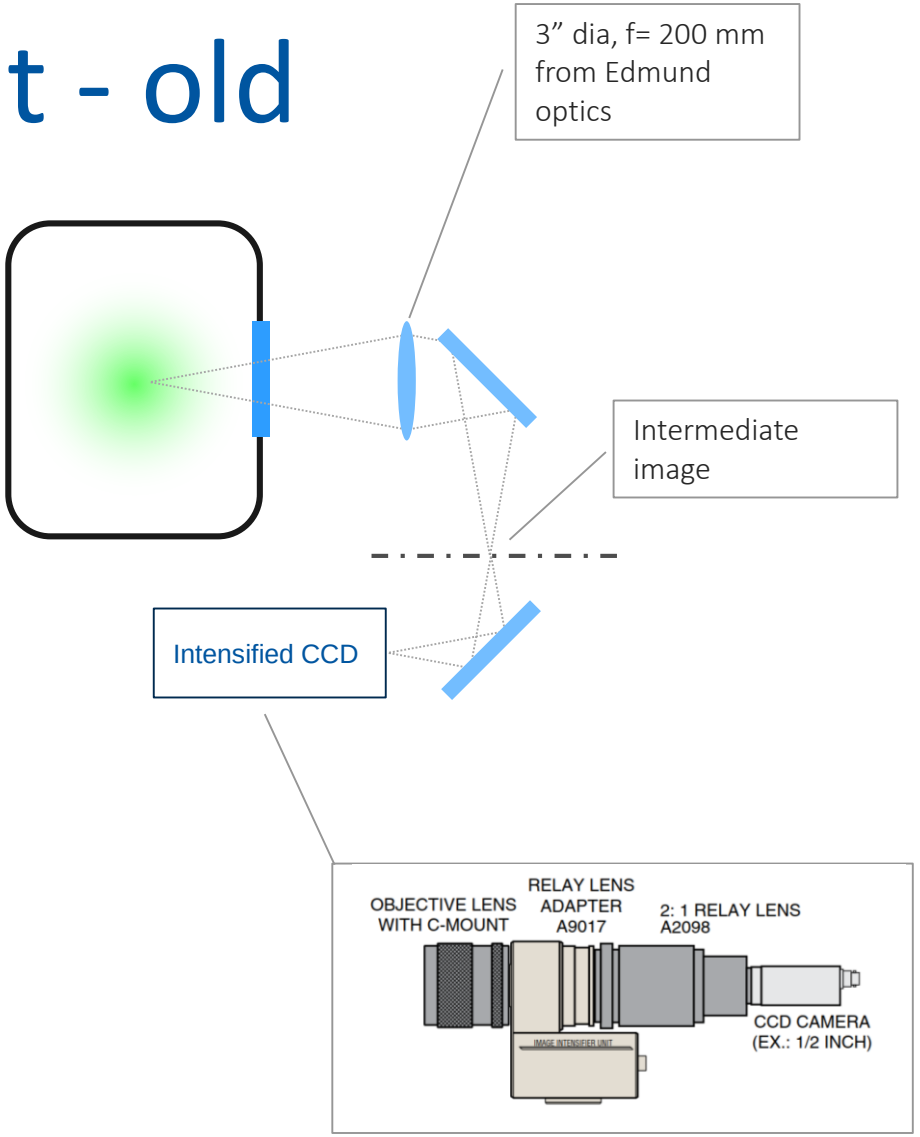

CERN

LHC BIF test setup - update

S. Mazzoni, 20/12/2017

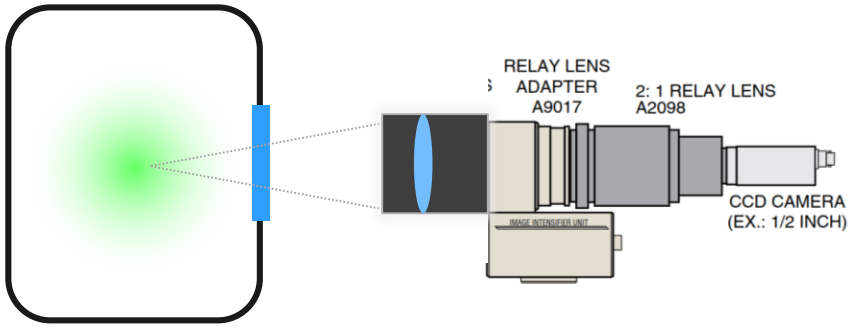
Optical instrument - old

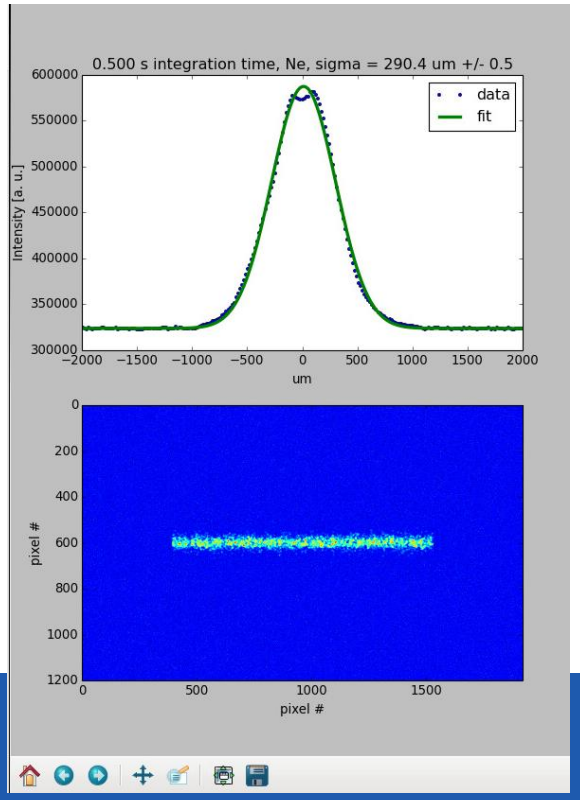
- Two-lens imaging. Maximise acceptance while keeping camera “far” from beam
- 3” achromat, 400 mm from source. Intermediate image at 1:1.
- Optical acceptance 2.7 x 10^{-2} Sr under the assumption that the lens is the entrance pupil.
- Intensified CCD assembly from Hamamatsu (more info next slide)
- For simulation purposes: end magnification 2:1



Optical instrument - new

- Single lens setup. BK7 Bi-convex lens, 2” diameter
- Mounted on 2” lens tube screwed onto the image intensifier
- f = 100 mm, Distance 250 mm final magnification M = 0.33





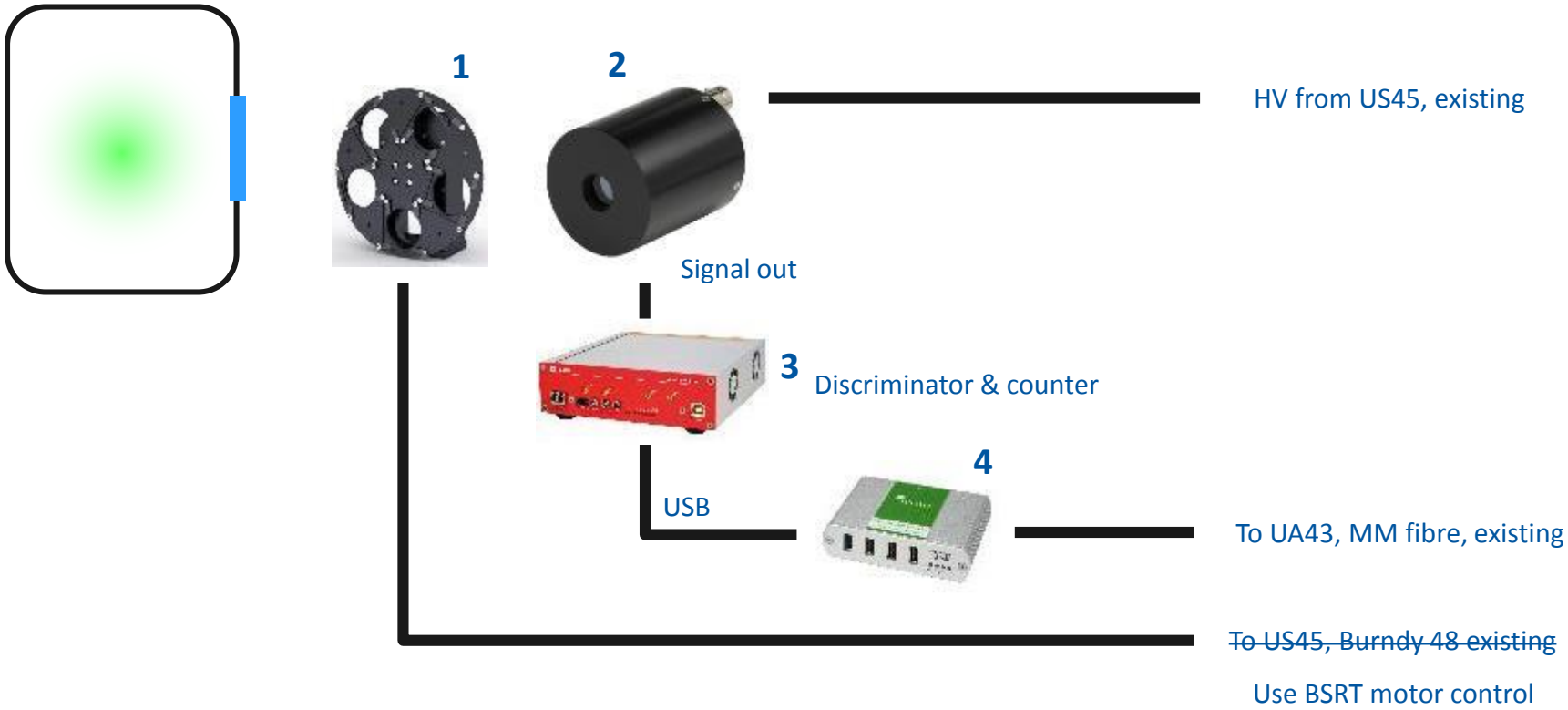
Bandpass filter

585nm CWL, 50mm Dia, 36nm Bandwidth, OD 6 Fluorescence Filter

Stock **#33-908**

Center Wavelength CWL (nm):	585	Bandwidth (nm):	36
Full Width-Half Max FWHM (nm):	40	Optical Density OD:	≥6.0
Clear Aperture CA (mm):	45.0	Blocking Wavelength Range (nm):	300 - 1100
Diameter (mm):	50.0	Diameter Tolerance (mm):	+0.00/-0.10
Transmission (%):	>93	Surface Quality:	60-40
Angle of Incidence (°):	0	Angle of Incidence Tolerance (°):	±5.0
Coating:	Hard Coated	Manufacturer:	EO
Mount Thickness (mm):	3.5	OD 6 Blocking Wavelength Range (nm):	300 - 556 & 618 - 780
Substrate:	UV Grade Fused Silica	Thickness Tolerance (mm):	±0.1
Transmitted Wavefront, RMS:	λ/4	Type:	Bandpass Filter
RoHS:	Compliant		

BIF setup – photon counting



1. Owis filter wheel **available**
2. Hamamatsu MCP PMT R5916U **available**
3. CAEN digitizer DT5720 ~~**to be** ordered~~
4. Icron USB to fibre ~~**to be** ordered~~

To be discussed

- Intensifier will not at CERN by EYETs end > start with photon counting **OK?**
- MCP-PMT requires water cooling (1-3 L/m, pressure below 0.3 MPa): available in LHC? **URGENT**
- Optical enclosure: mechanical design (ideally with CATIA) with support from ML section? **OK**

LHC planning

https://lhc-commissioning.web.cern.ch/lhc-commissioning/schedule/2018-LHC-schedule_v0.3.pdf