

# EM facilities & specifications for ET multi-messenger science

S.D. Vergani



# EM facilities for ET multi-messenger science

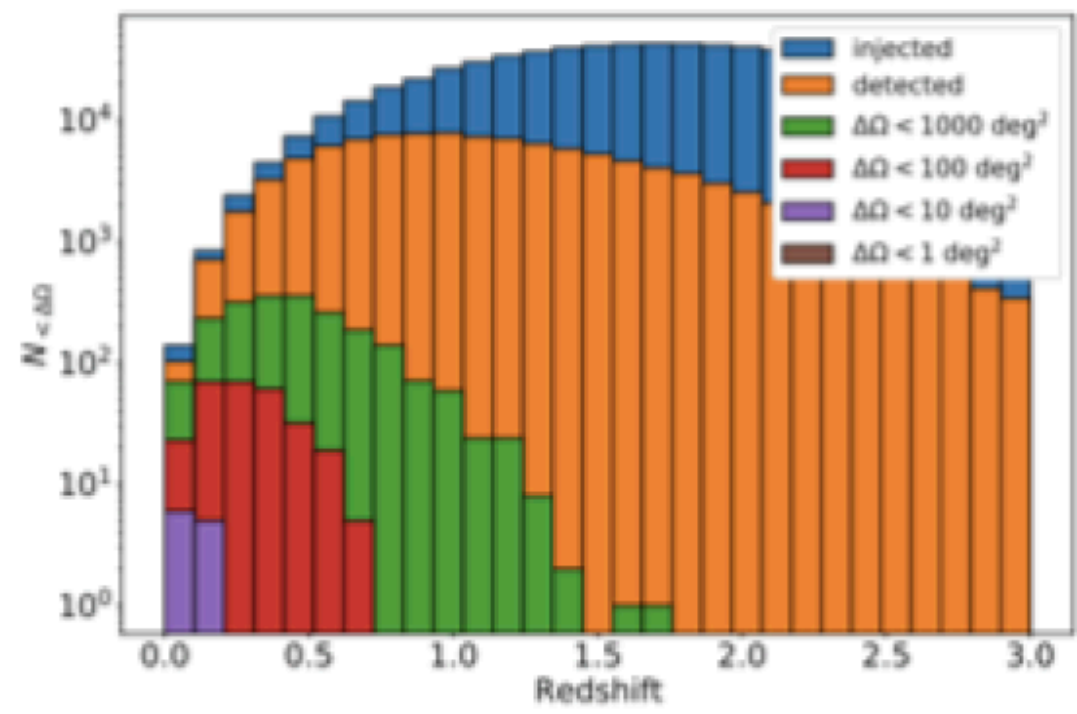
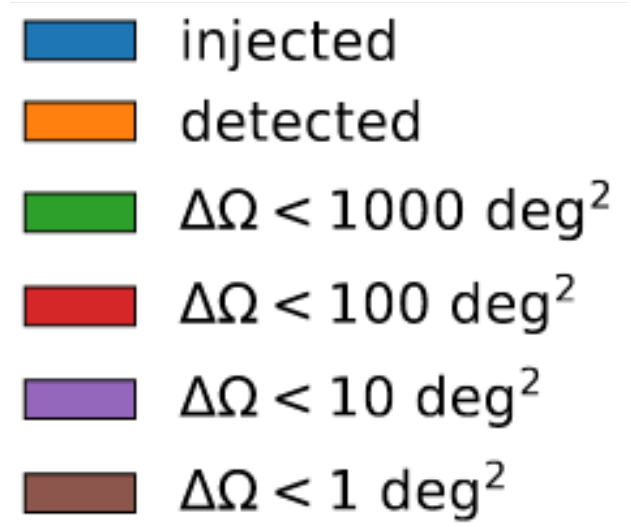
- MWL instrument tables
- WST



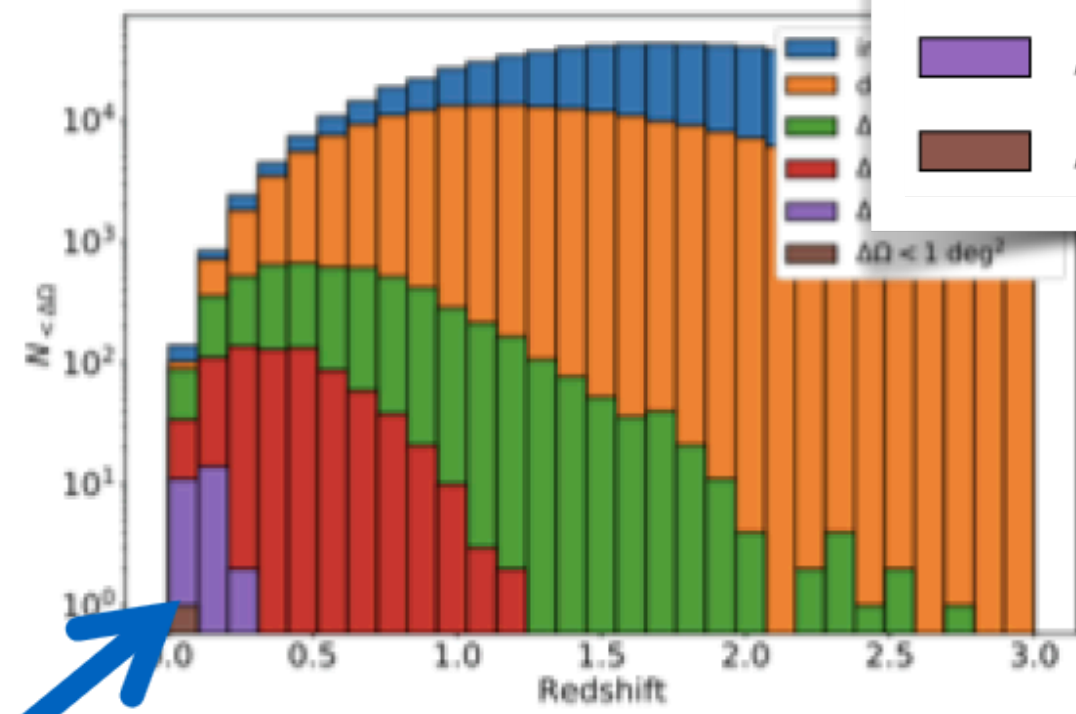
# EM facilities for ET multi-messenger science

Configuration study

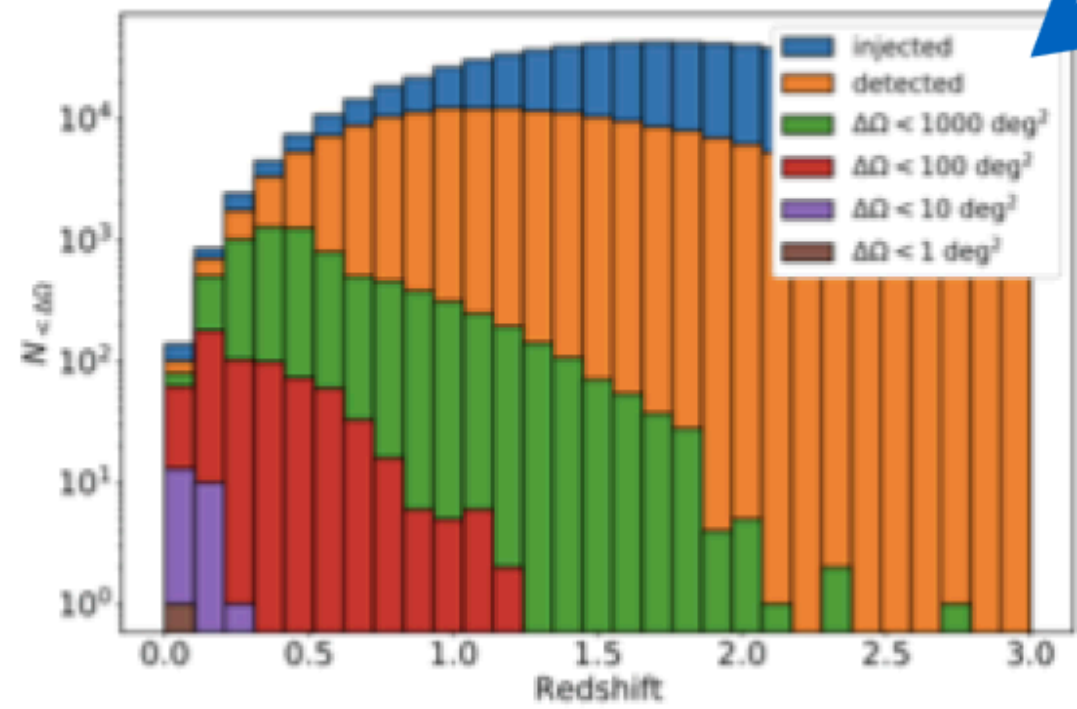
Ronchini+22



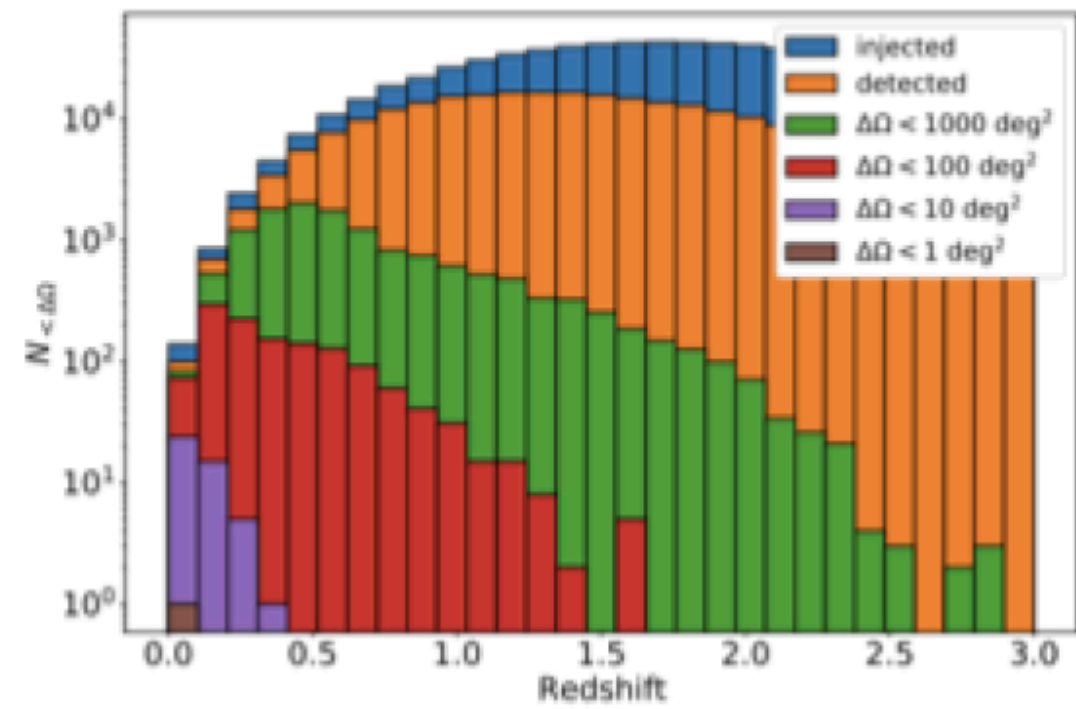
(a)  $\Delta$  10 km HFLF cryo



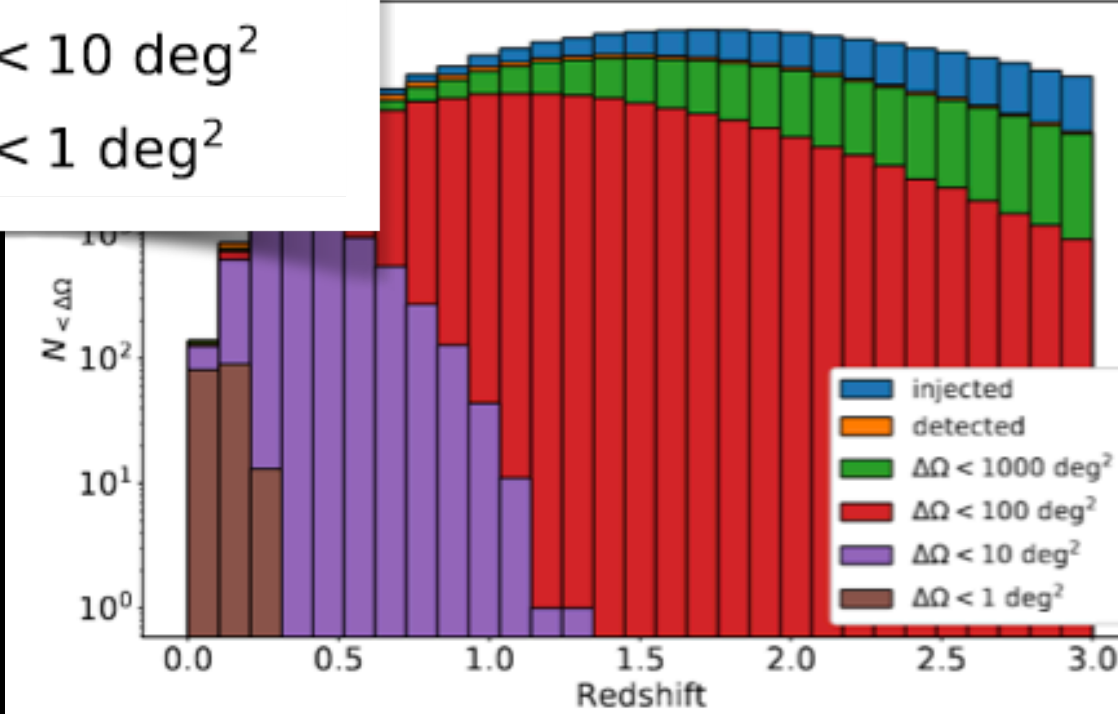
(b)  $\Delta$  15 km HFLF cryo



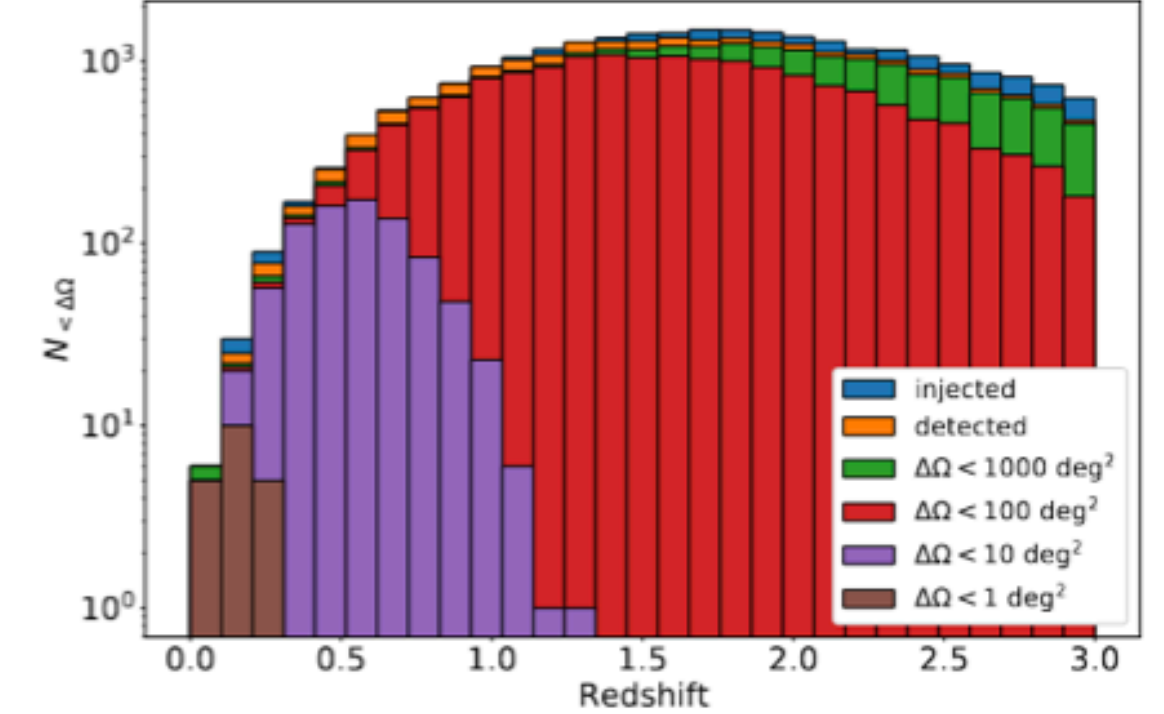
(d) 2L 15 km HFLF cryo



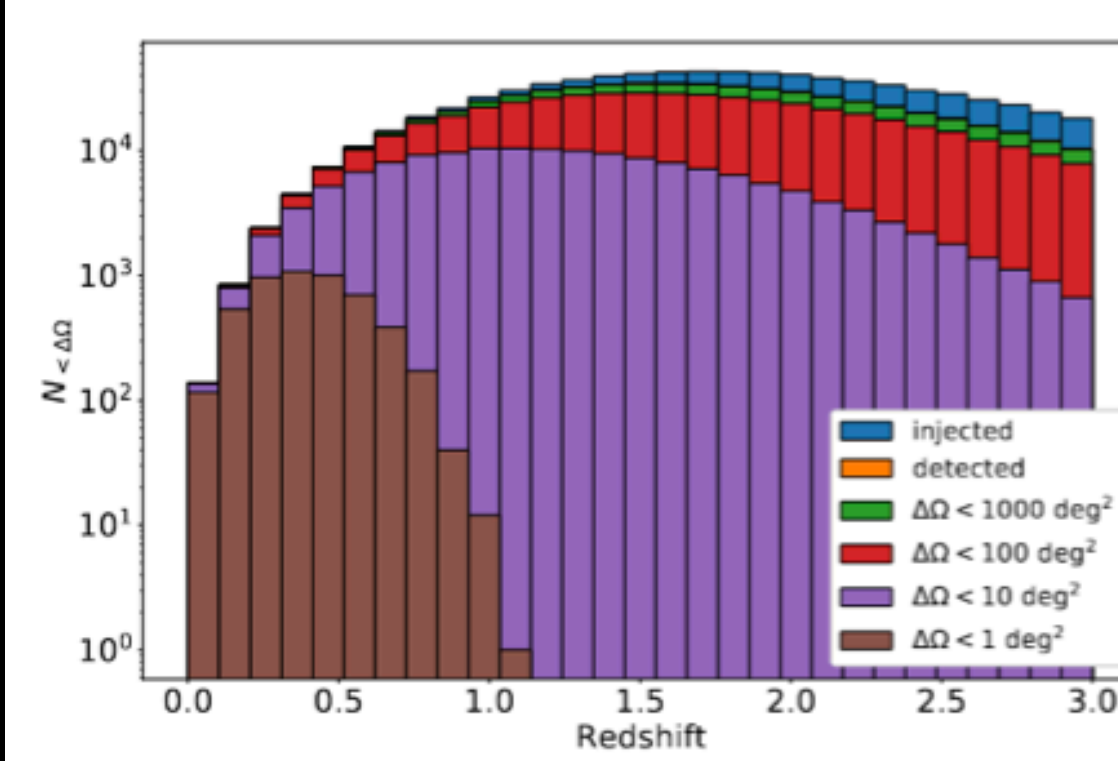
(e) 2L 20 km HFLF cryo



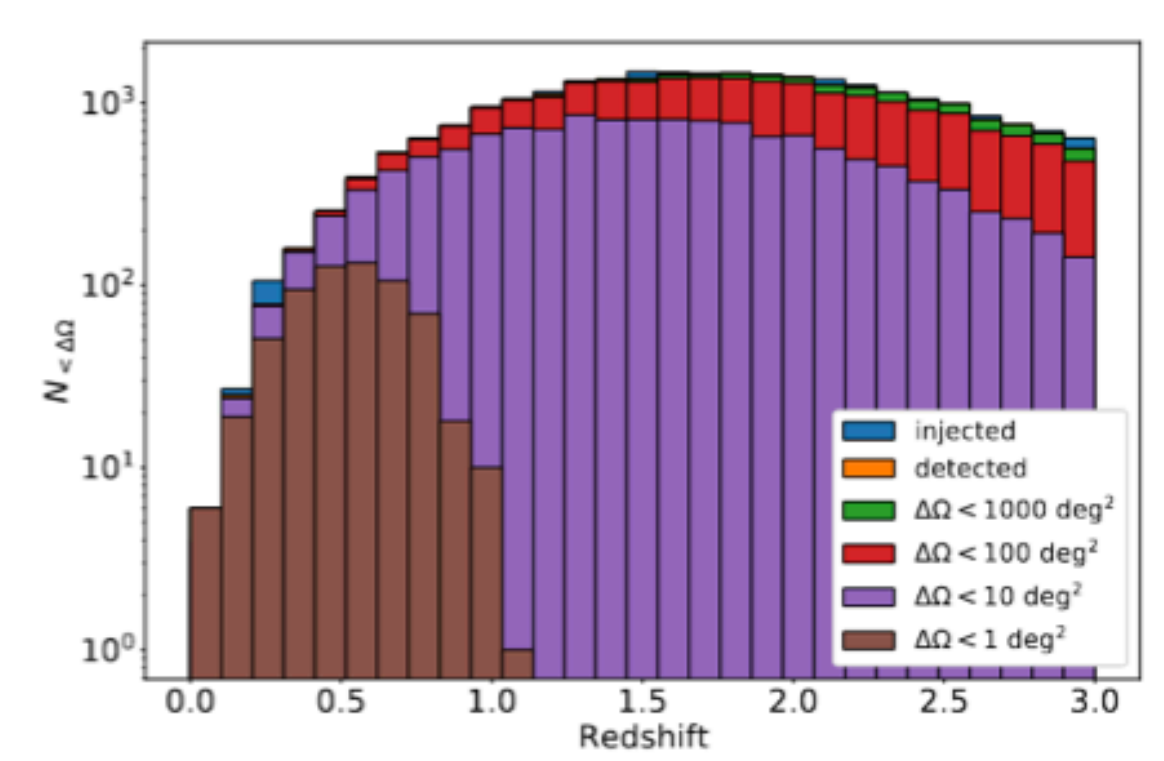
(c) ET+CE, all angles



(d) ET+CE,  $\theta_v < 15^\circ$



(e) ET+2CE, all angles



(f) ET+2CE,  $\theta_v < 15^\circ$



# EM facilities for ET multi-messenger science

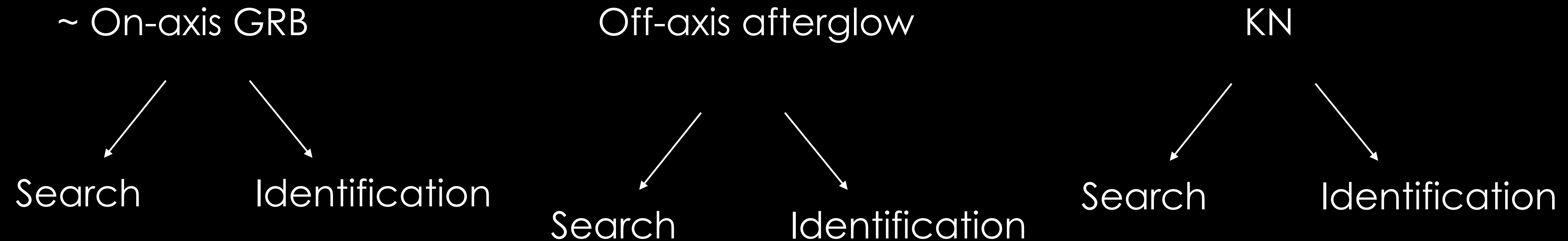
- Cover the entire EM spectrum
- Different goals (search, identification,...)
- Different phenomena (GRB, KN, off-axis afterglow,...)
- Different strategies (low-redshift, high-redshift, error region,...)





# EM facilities for ET multi-messenger science

## Specifications needed

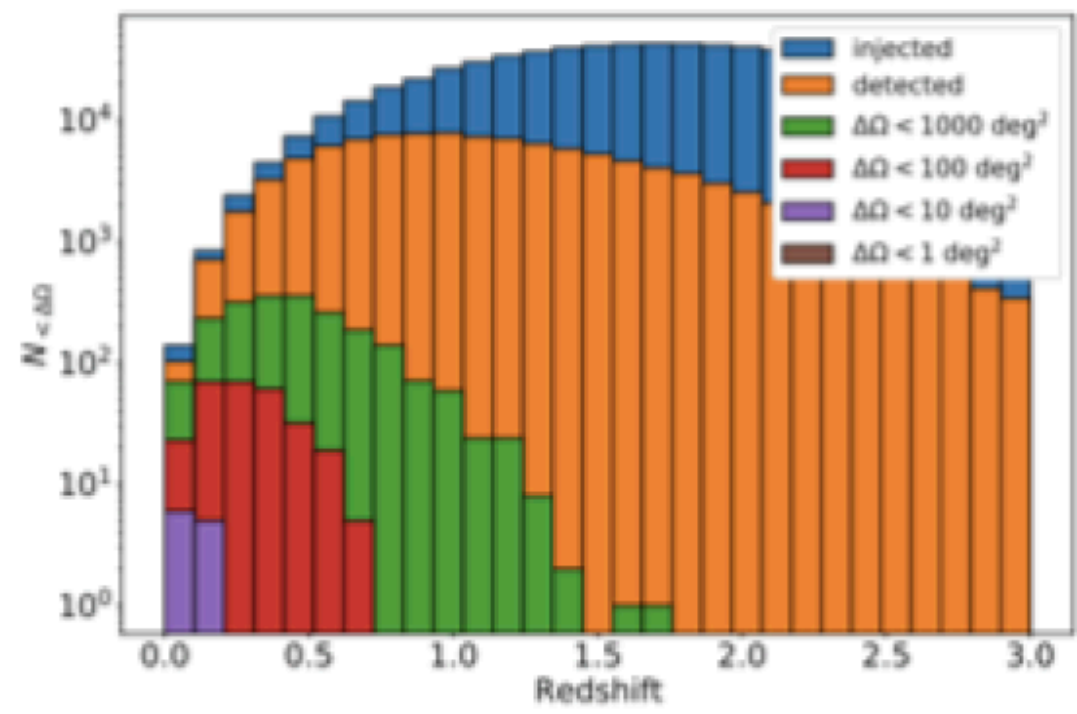
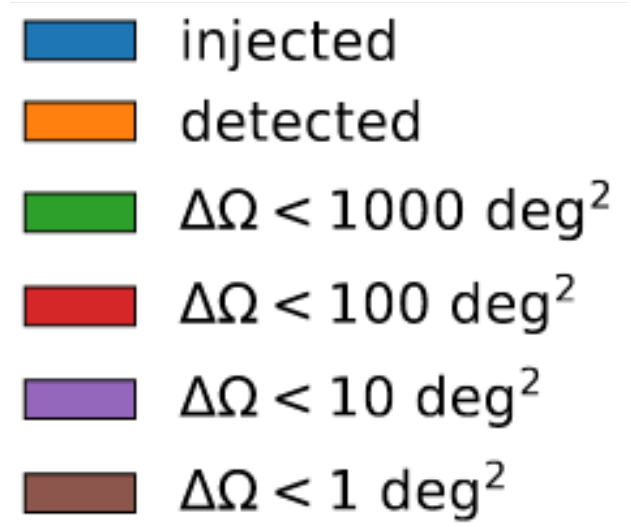




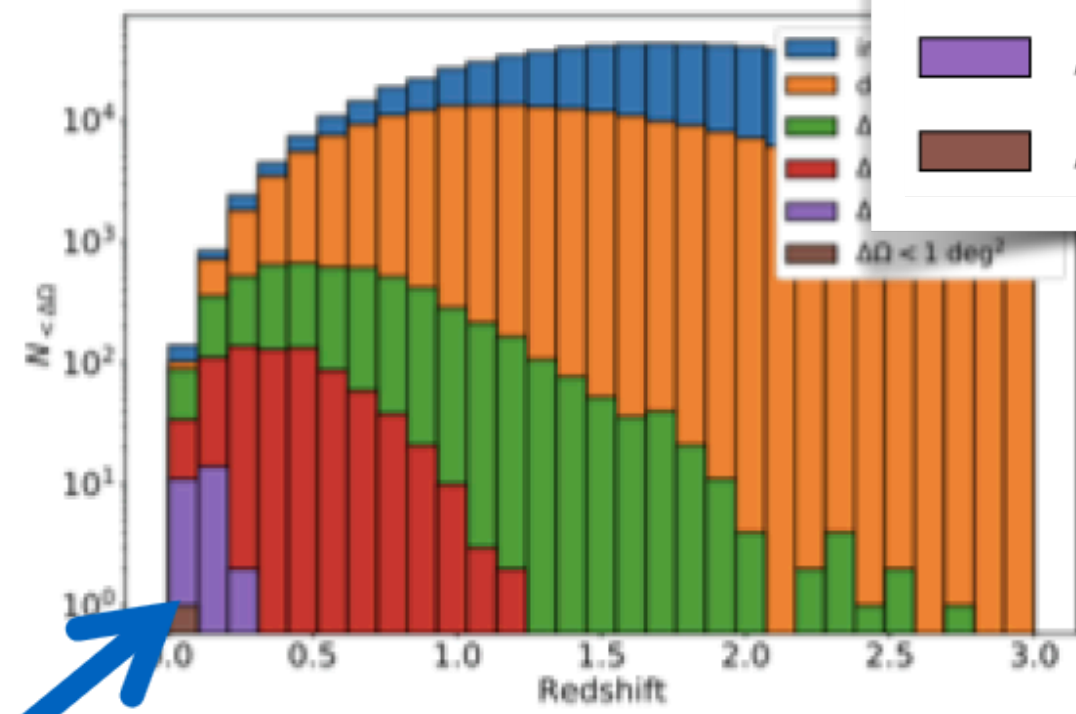
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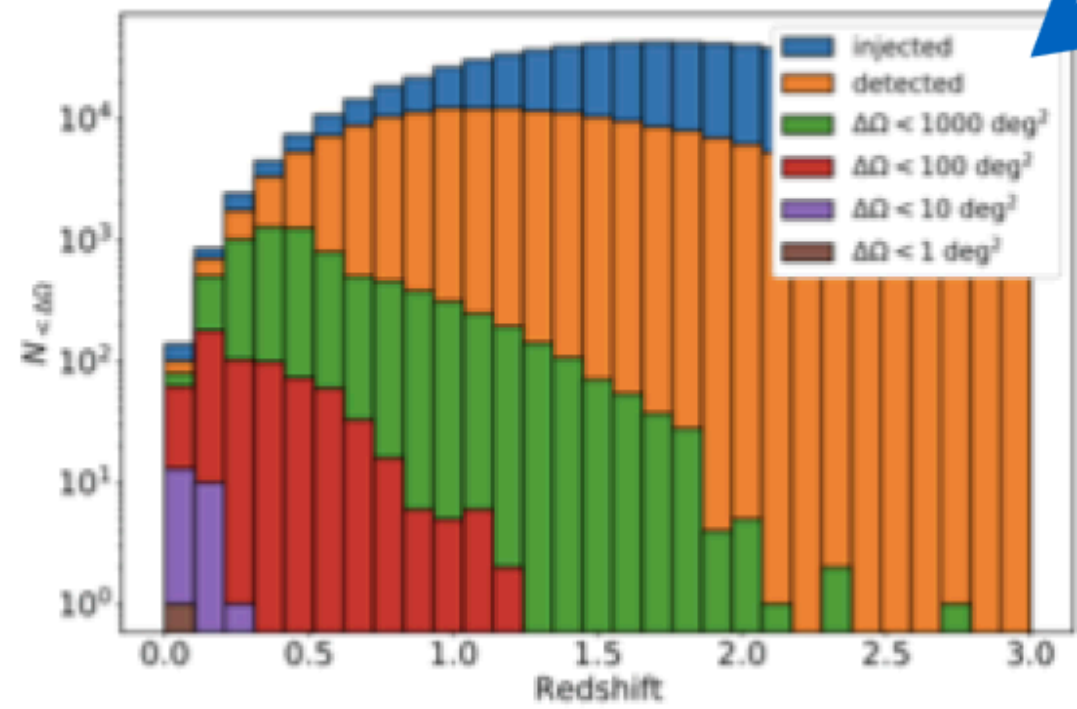
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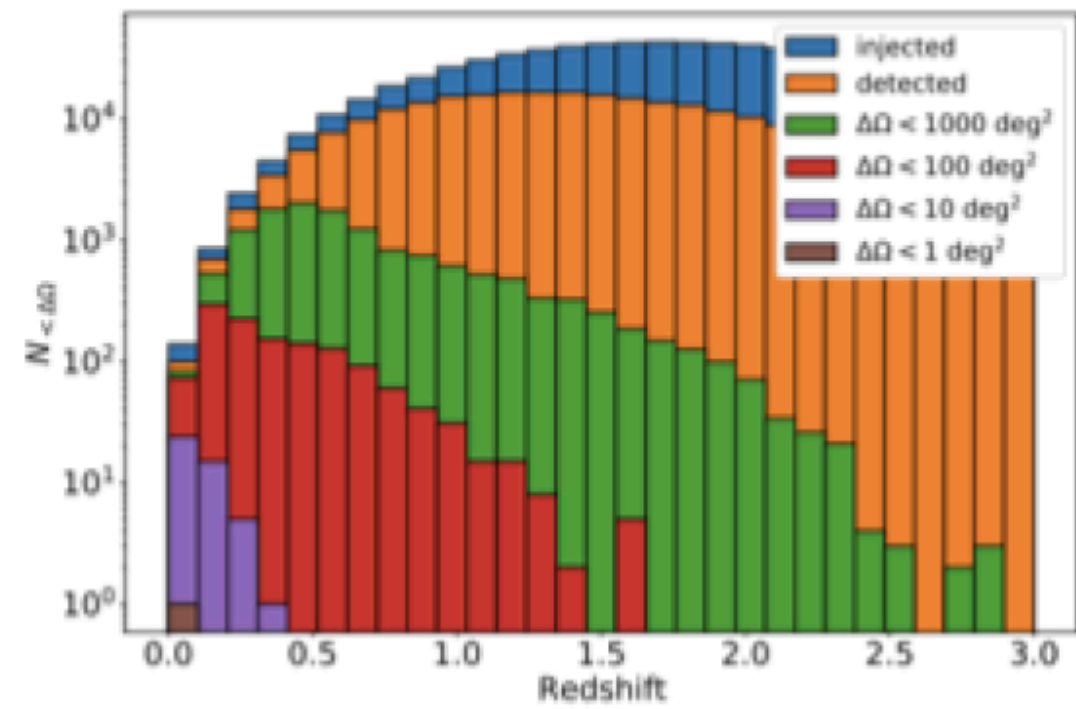
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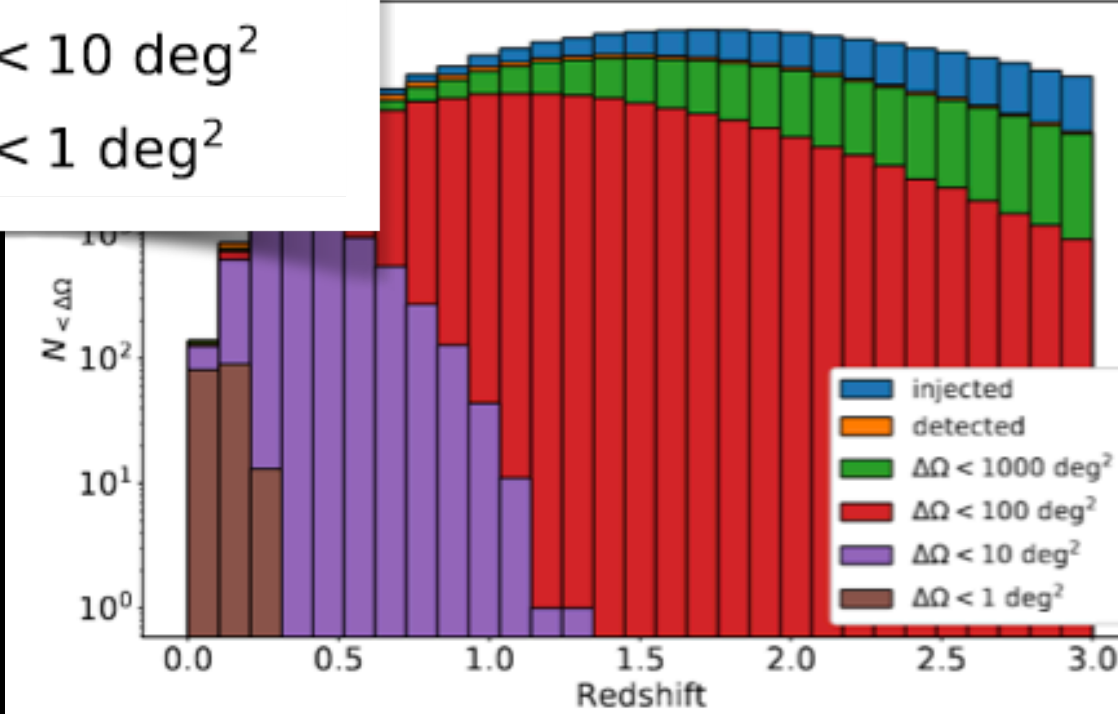
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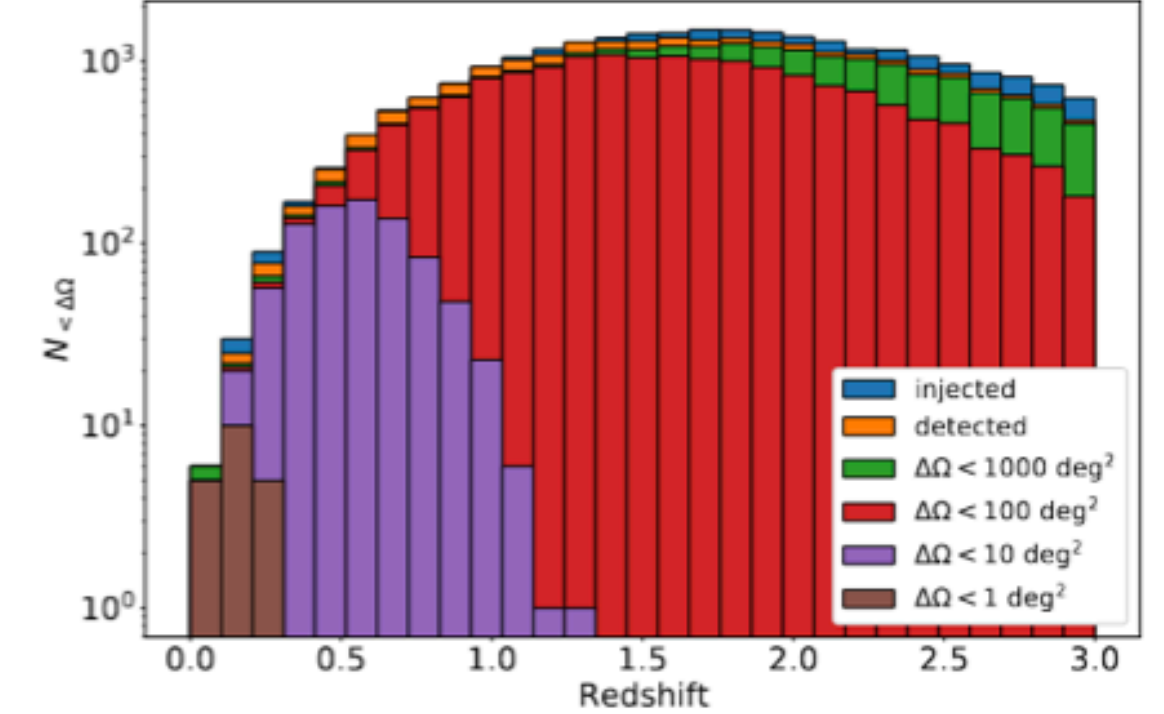
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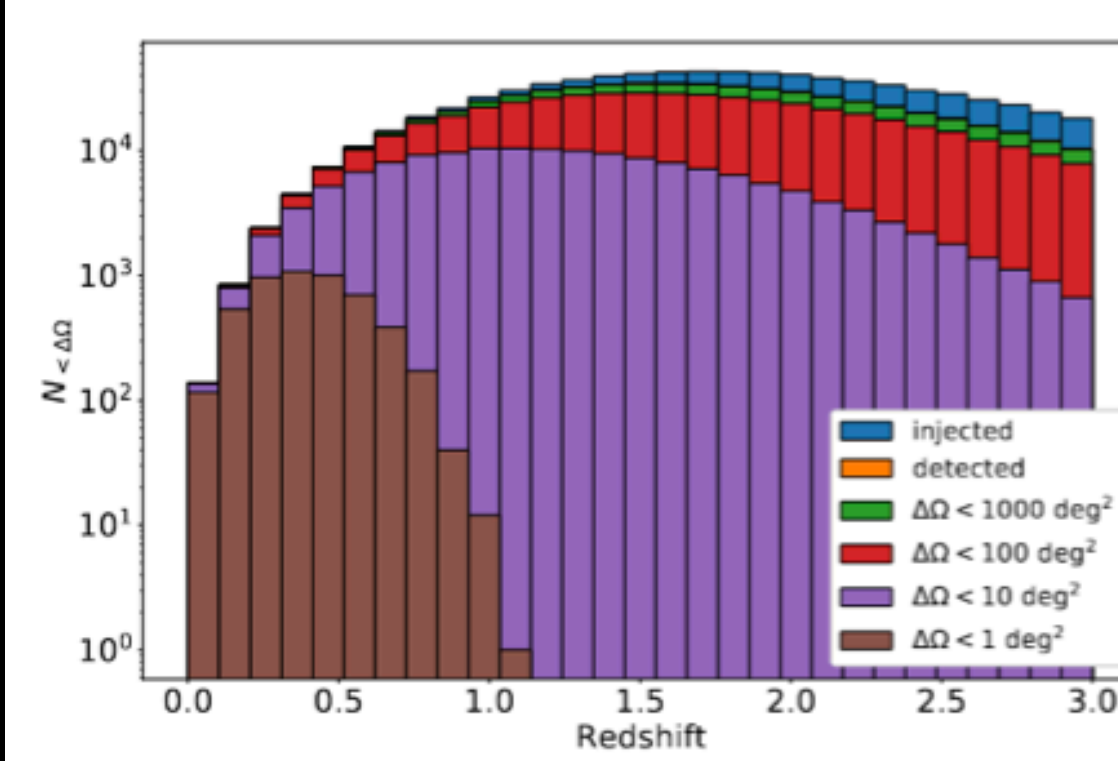
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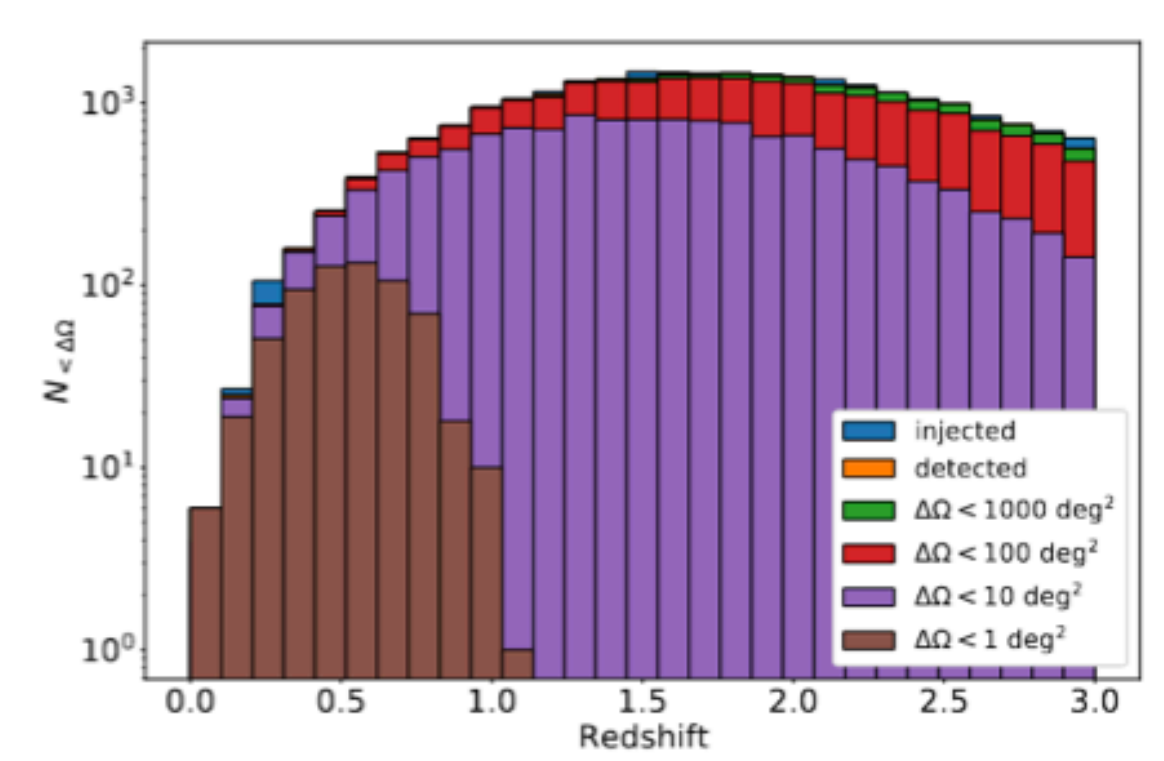
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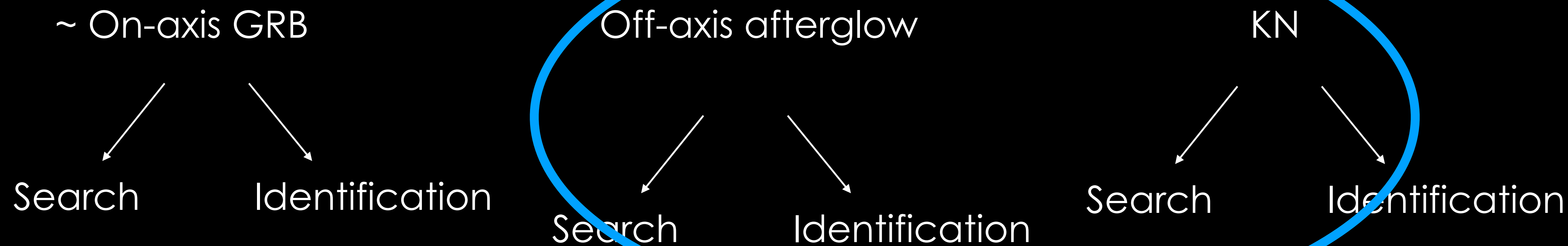


(f) ET+2CE,  $\theta_v < 15^\circ$



# EM facilities for ET multi-messenger science

## Specifications needed



# EM facilities for ET multi-messenger science

## Required Instruments specifications

KN search	FoV	Sensitivity	ToO delays	Resolution	Range	Survey strategy	Time/yr
UV							
Optical							
NIR							
Radio							



Telescope Aperture	12 m, seeing limited	
Telescope FoV	2.5 - 5 deg <sup>2</sup>	
MOS LR Multiplex	20,000	
MOS LR Resolution	2,000-7,000	
MOS LR Spec Range	370 (350) - 970 nm	IR extension to a later stage
MOS HR Multiplex	2,000	
MOS HR Resolution	20,000-40,000	
MOS HR Spec Range	3-4 regions in 350-970 nm	
IFS FoV	3x3 arcmin <sup>2</sup>	
IFS Resolution	3,000-5,000	
IFS Spec Range	370-970 nm	
IFS Mosaic	9x9 arcmin <sup>2</sup>	
MOS & IFS simultaneous operation		



ET simulations

*Sofia Bisero (PhD student)*

+

WST simulator



WST-ET Science case

KN + GRB properties

*GSSI group & Milano Bicocca PROMETEO group*



Thank you!

