Probing neutron star magnetic fields using X-ray polarimetry

Nirmal Kumar Iyer

on behalf of the XL-Calibur collaboration

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Astronomdagarna 2021

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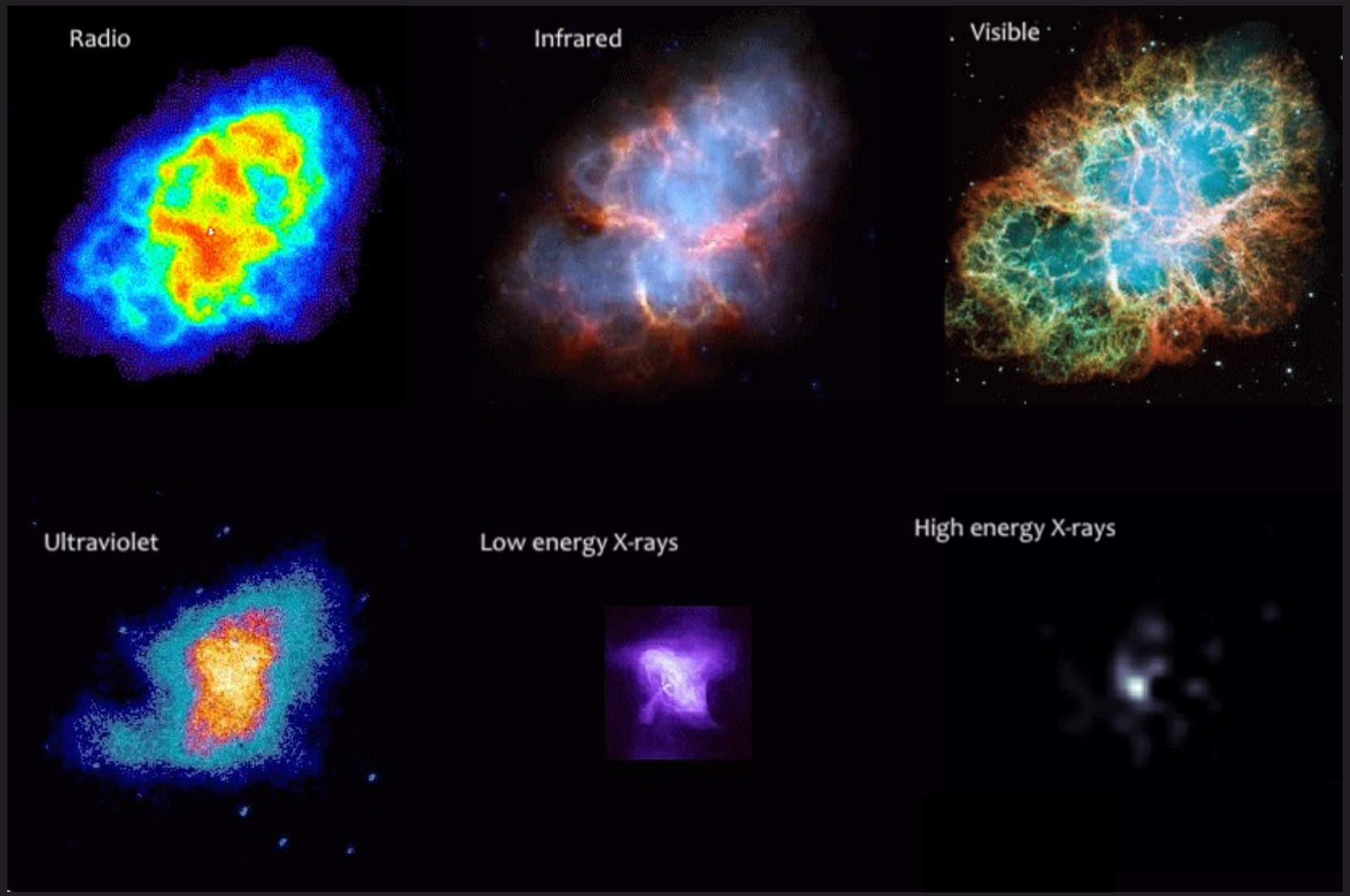
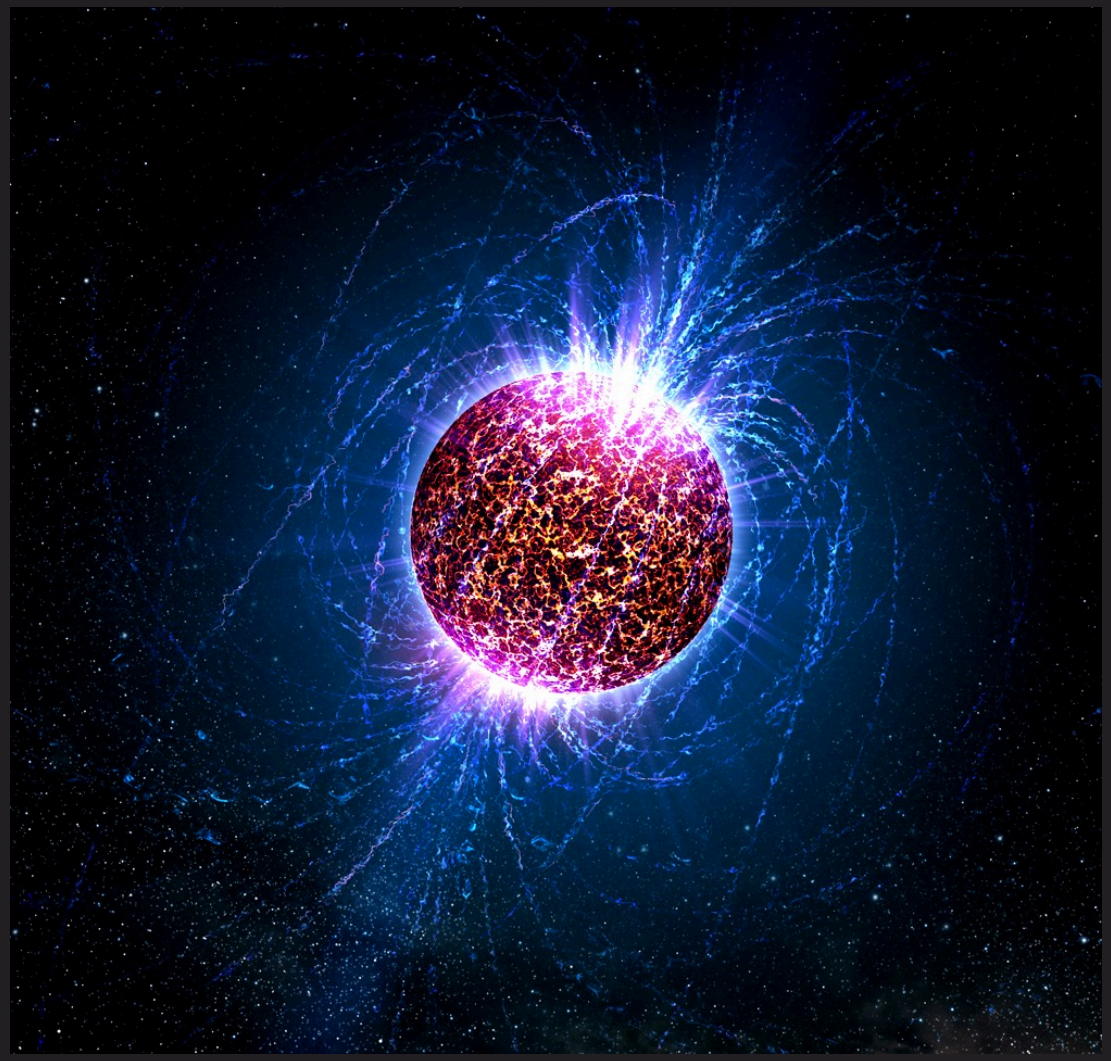


Probing neutron star magnetic fields using X-ray polarimetry

Intense magnetic fields



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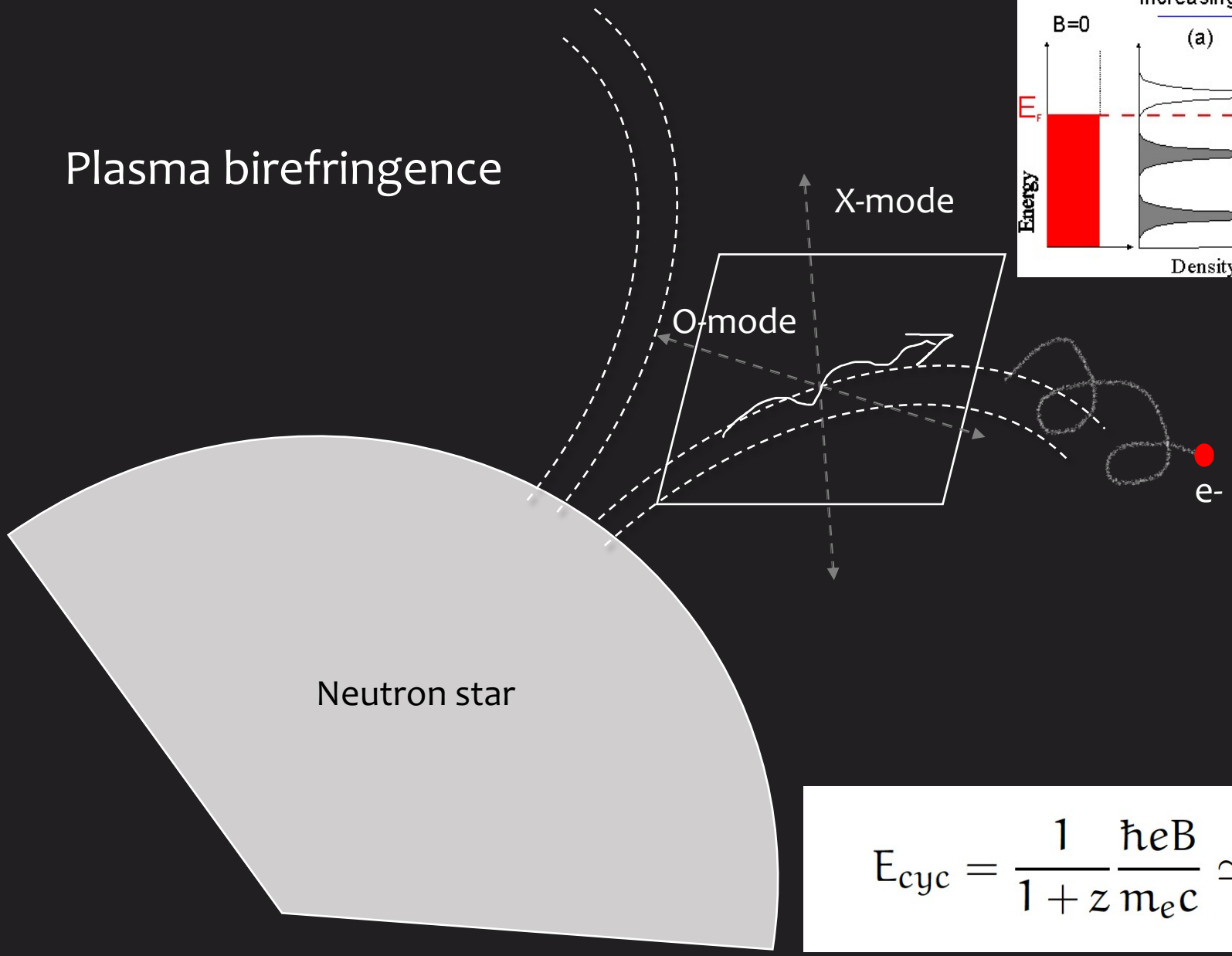
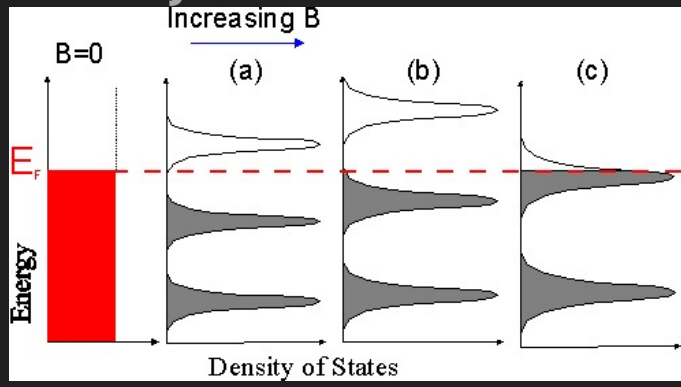
Intense magnetic fields

Plasma birefringence





$$E_{cyc} = \frac{1}{1+z}\frac{\hbar e B}{m_e c} \simeq \frac{11.6 B_{12}}{1+z}\text{keV}$$

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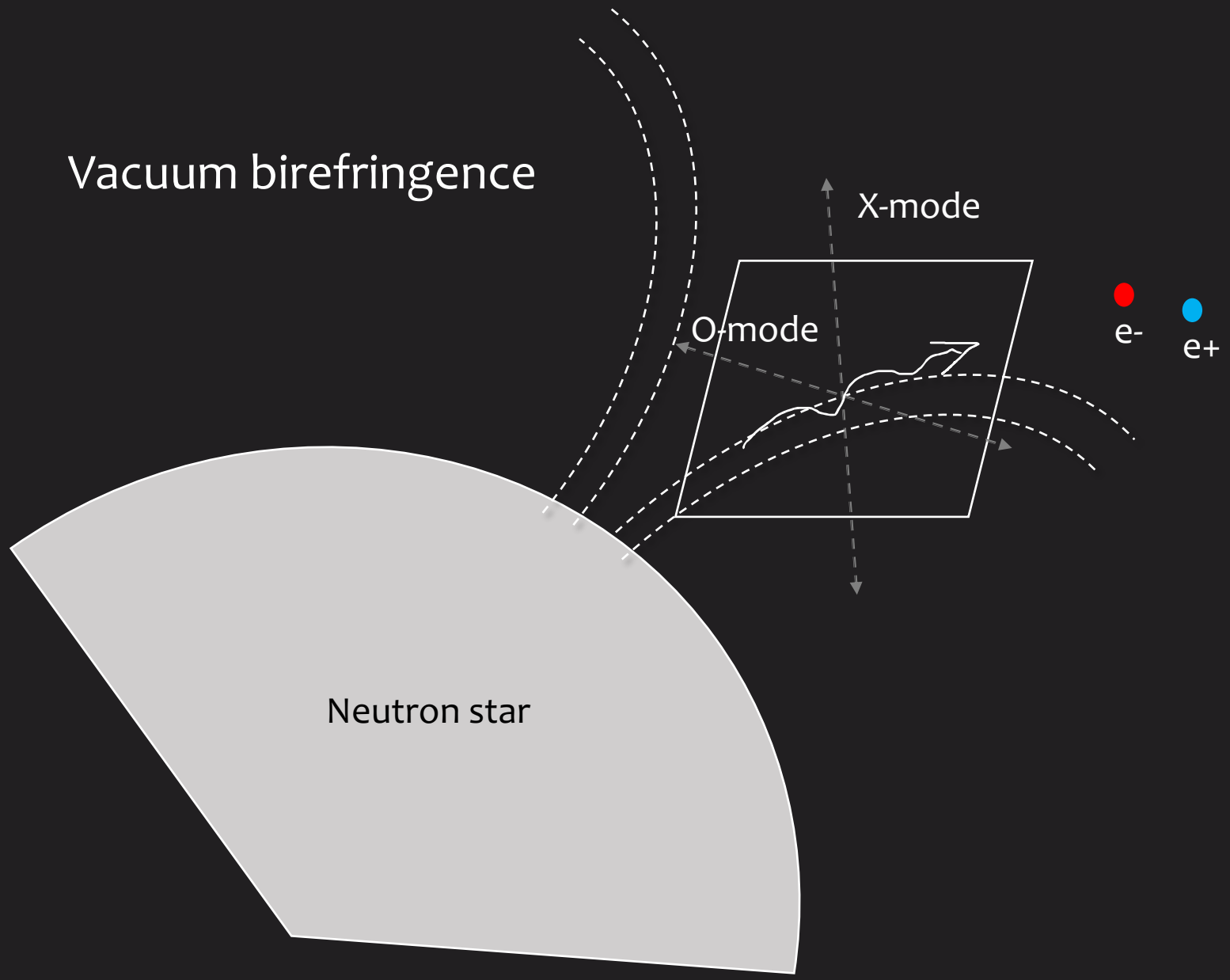
Intense magnetic fields

Vacuum birefringence



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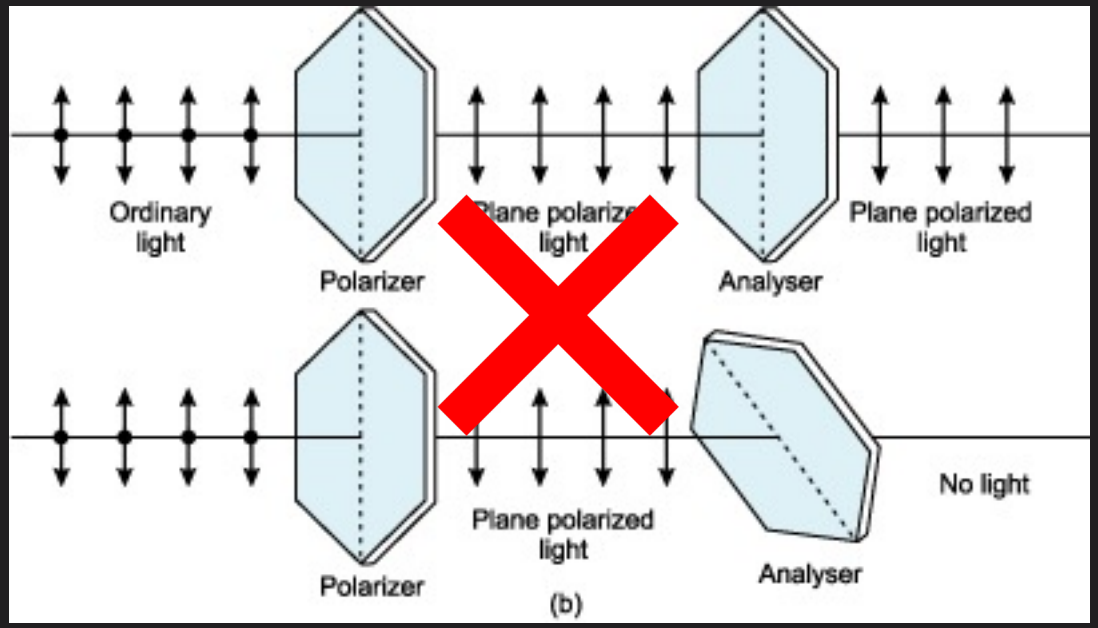
X-ray detection techniques

Non-trivial low photon statistics



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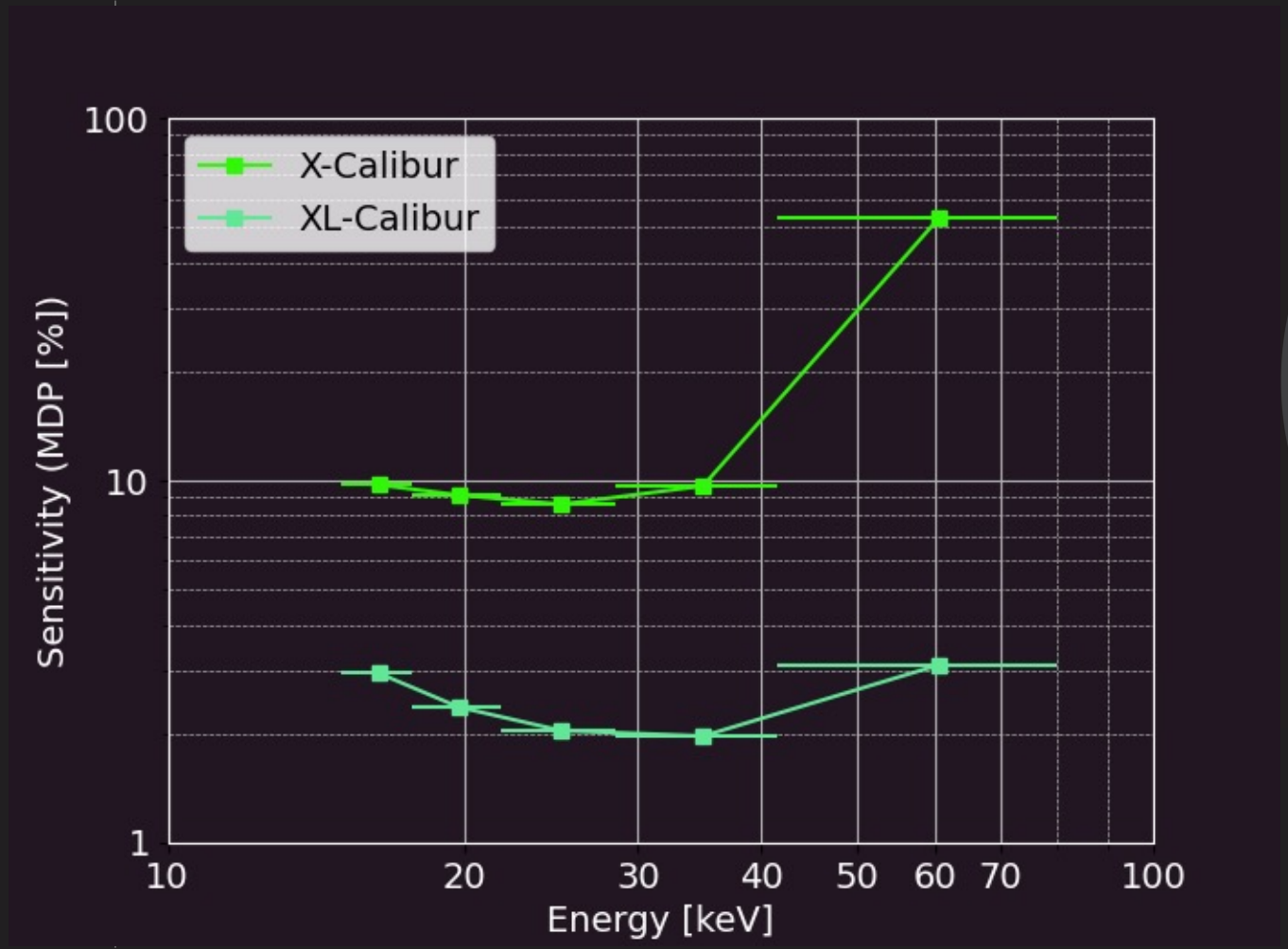

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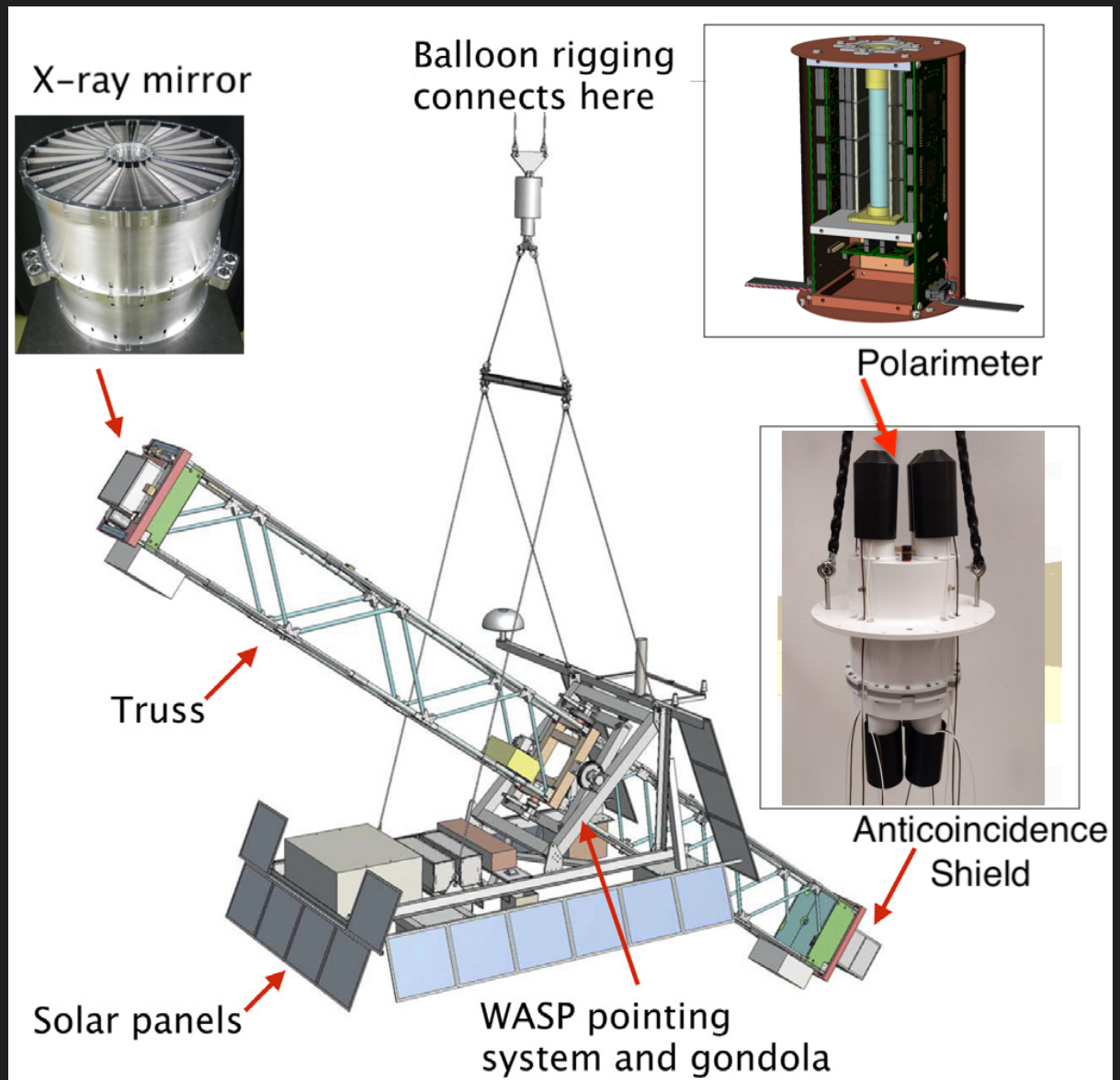
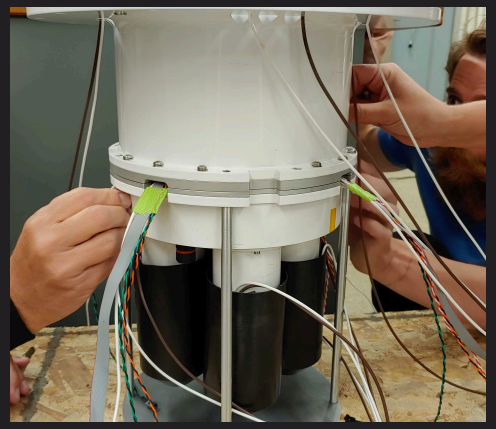
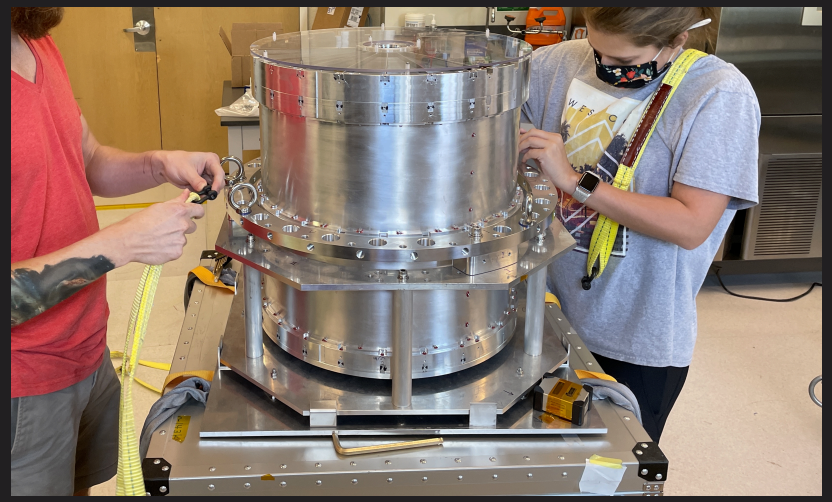
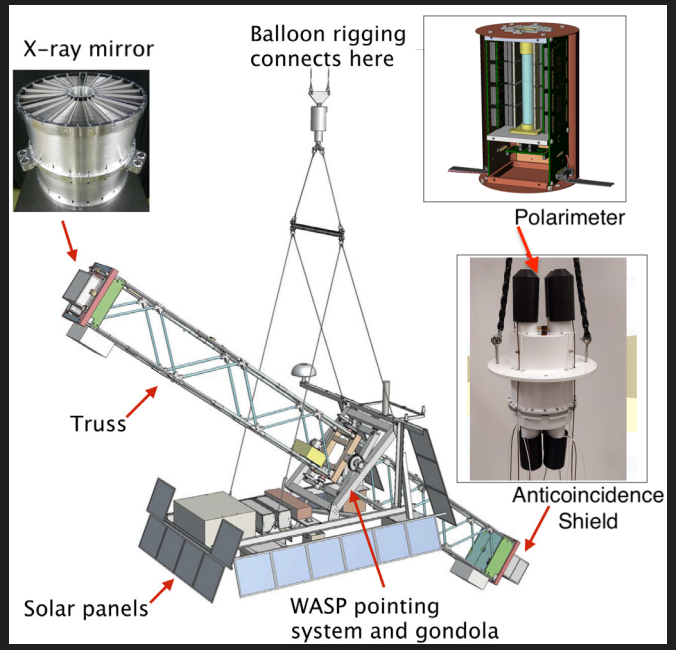
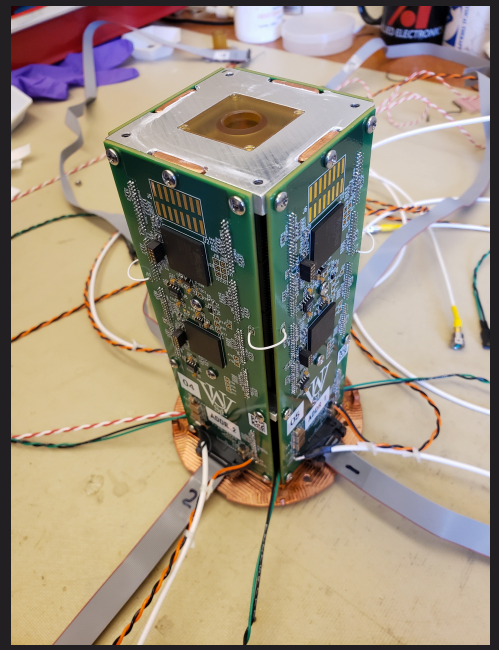


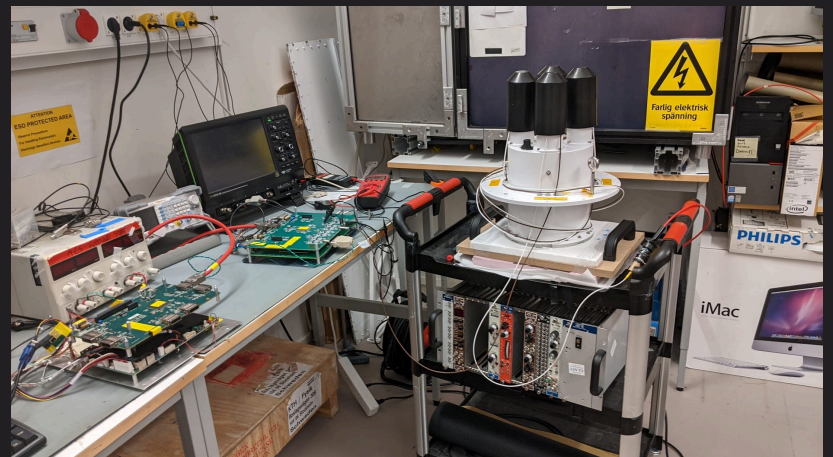
Abarr+ 2021 (Astroparticle physics)






X-ray mirror
Balloon rigging connects here
Polarimeter
Truss
Anticoincidence Shield
Solar panels
WASP pointing system and gondola

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