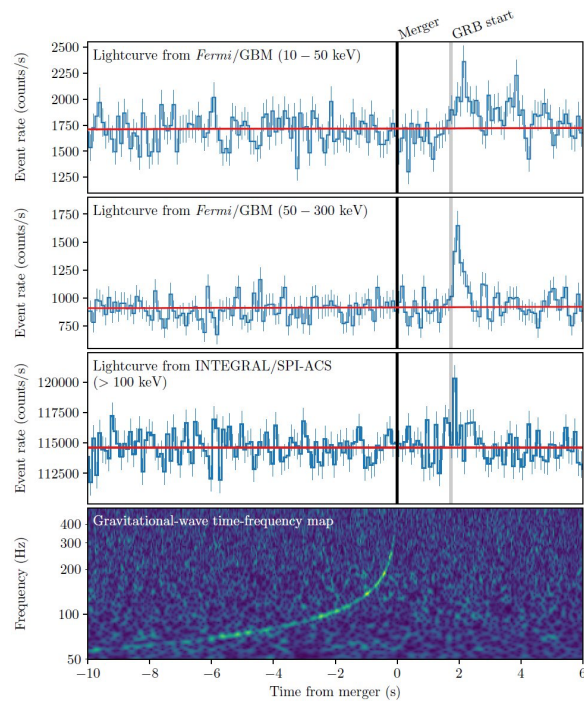


A visualization of a gravitational well, showing two bright yellow spheres representing black holes in the center, surrounded by concentric blue rings that represent the curvature of spacetime. The background is a dark blue grid with small white stars.

**(Some of)
Neil's contributions to
GW170817**

E. Troja
UMD/NASA/GSFC

The beginning



Goldstein+17
Savchenko+17

Search for an EM counterpart

GALAXY STRATEGY FOR LIGO-VIRGO GRAVITATIONAL WAVE COUNTERPART SEARCHES

CrossMark

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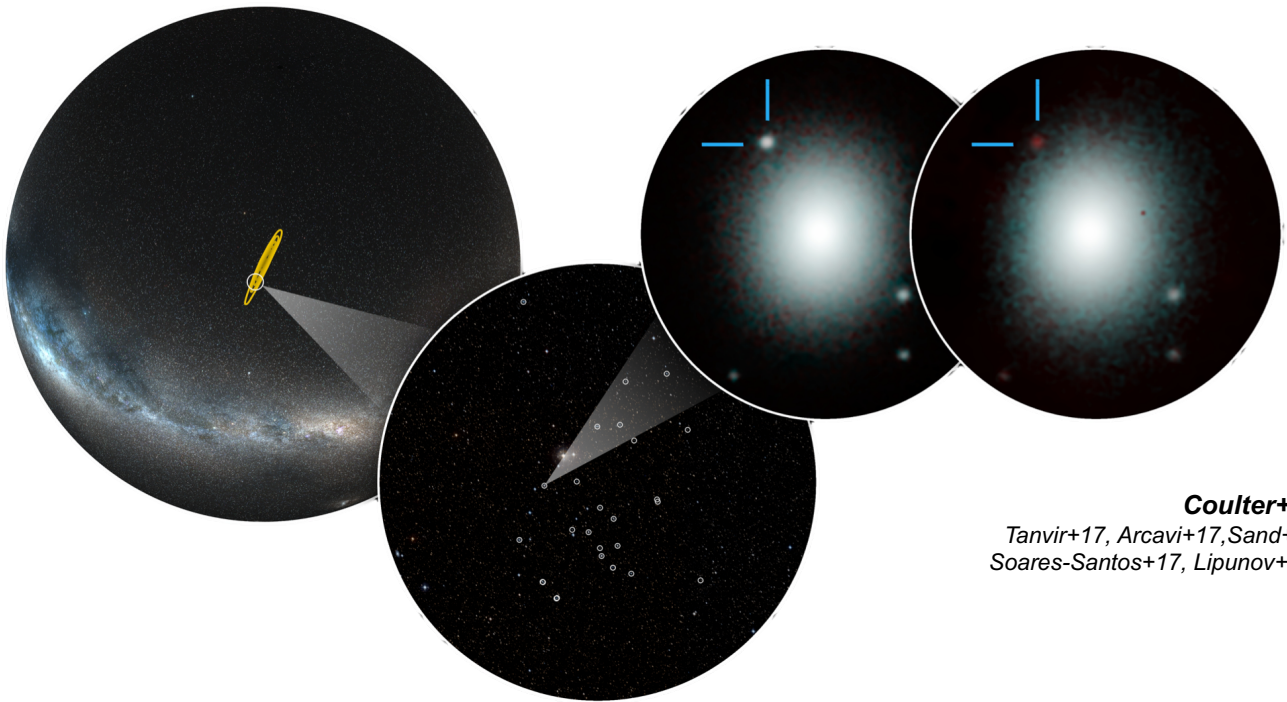
Received 2015 August 14; accepted 2016 February 5; published 2016 March 30

ABSTRACT

In this work we continue a line of inquiry begun in Kanner et al. which detailed a strategy for utilizing telescopes with narrow fields of view, such as the *Swift* X-ray Telescope (XRT), to localize gravitational wave (GW) triggers from LIGO/Virgo. If one considers the brightest galaxies that produce ~50% of the light, then the number of galaxies inside typical GW error boxes will be several tens. We have found that this result applies both in the early

Kanner+12, Gehrels+16

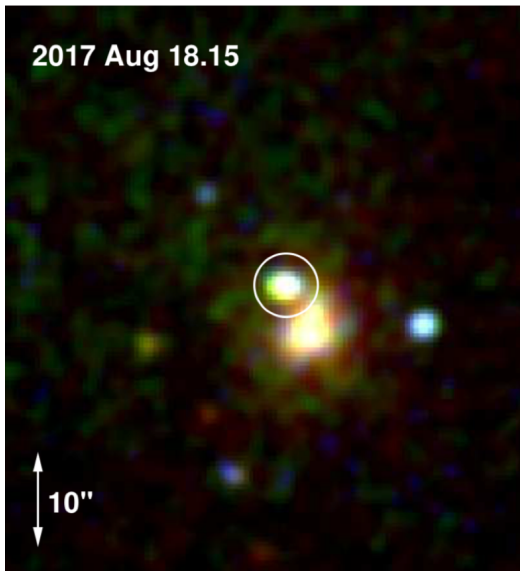
Optical discovery



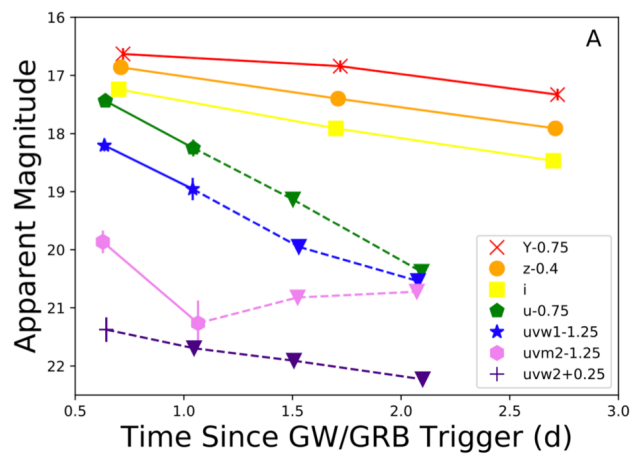
Coulter+17

*Tanvir+17, Arcavi+17, Sand+17,
Soares-Santos+17, Lipunov+17,*

Swift contribution



Evans+17



Not a typical afterglow.
First evidence of a **blue kilonova**.

GW170817 campaign



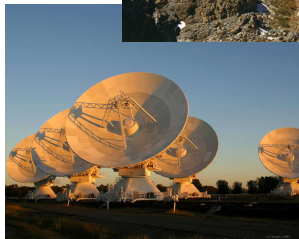
Neil's advice

If we can get it, then we should jump on it

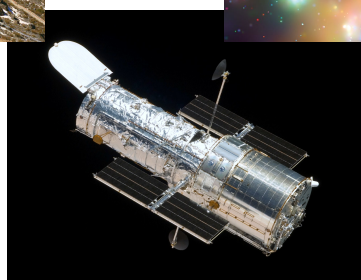
Gemini



Chandra



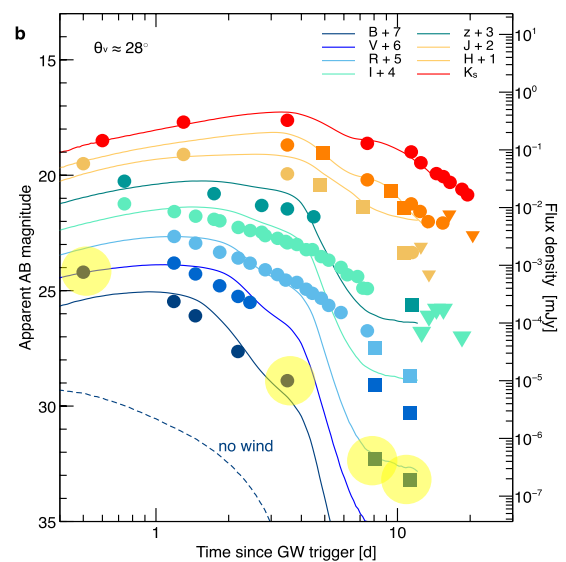
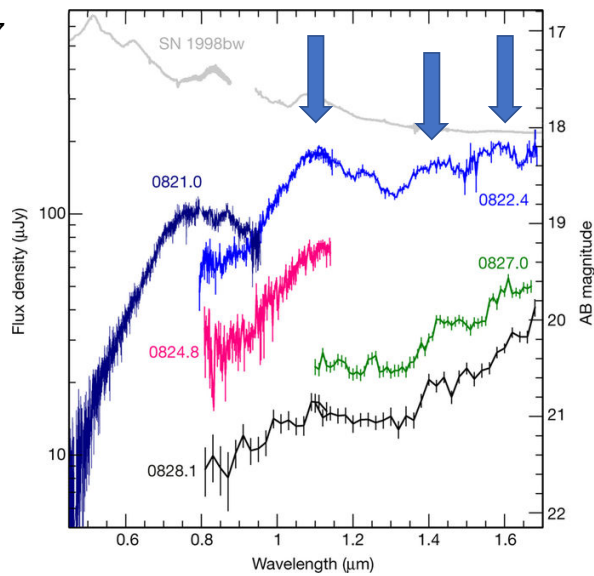
ATCA



Hubble

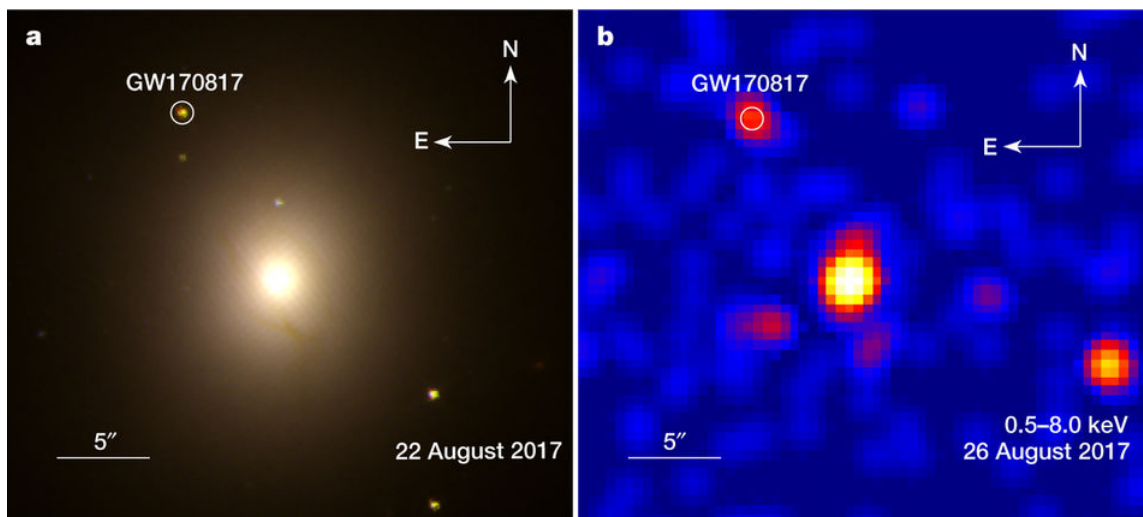
Kilonova: results and open questions

Troja+17



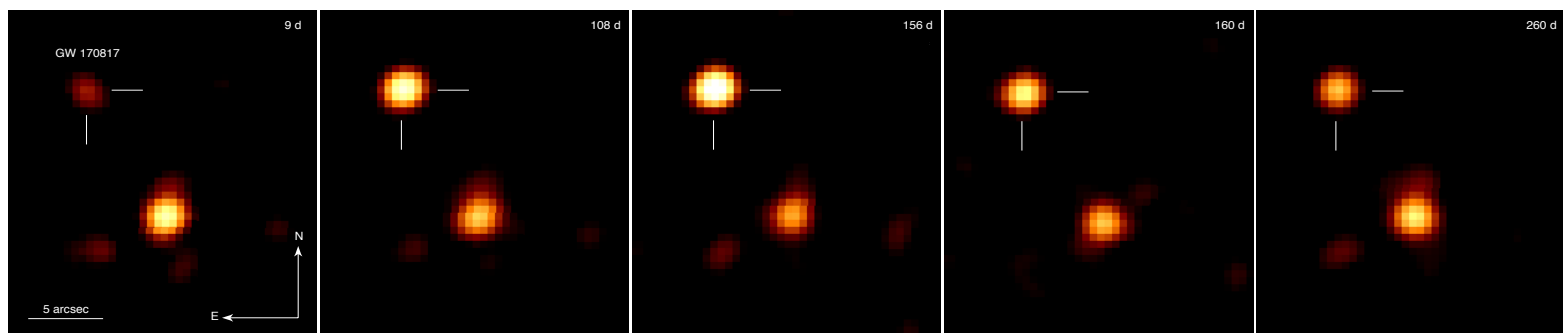
Pian+17, Tanvir+17, Evans+17, Drout+17, Smartt+17, Arcavi+17, Kasen+17, Kasliwal+17, Chornock+17 and many more

Finally the afterglow



Troja+17

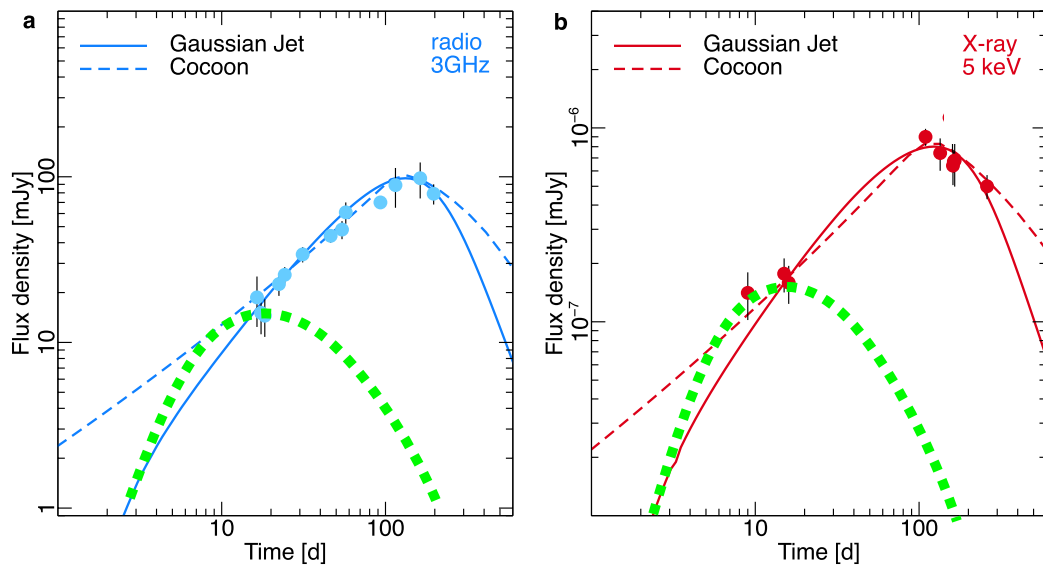
Last to arrive, last to leave



Troja+18, Piro+18

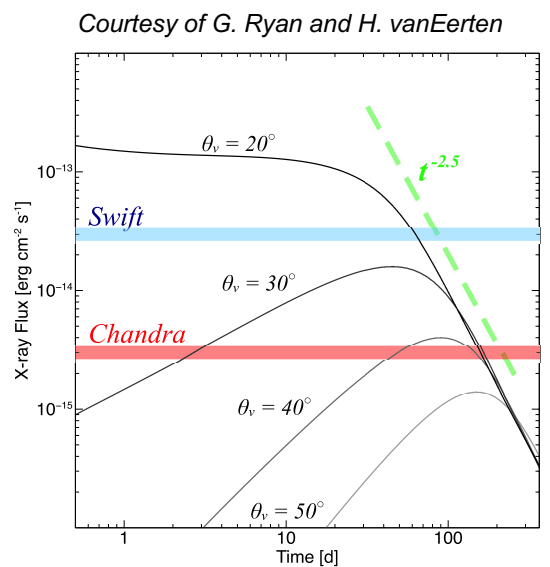
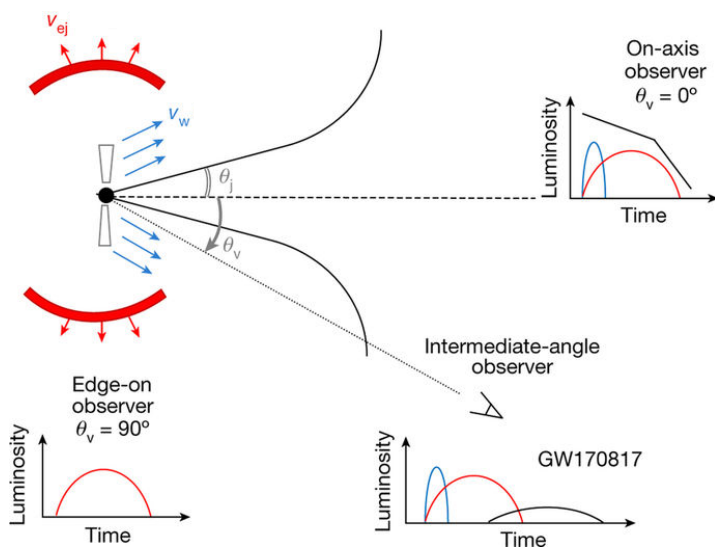
D'Avanzo+18, Ruan+18, Pooley+18, Margutti+18, Nynka+18, Alexander+18 and many more

The jet of GW170817: relativistic or choked?



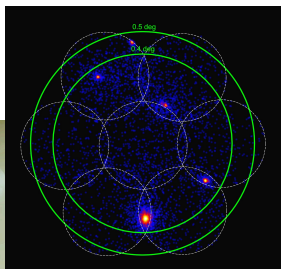
Troja+17, Troja+18, Piro+18
Hallinan, Corsi+17, Mooley+17, Dobie+18

Future EM counterparts: what to expect?



The real beginning: Neil's vision

Swift

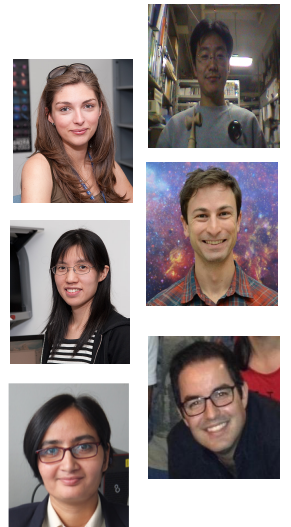


RATIR



DCT

NPP Fellows



Thank you
Neil!