Imaging Spectroscopy of the February 20, 2002 flare: RHESSI observations

Säm Krucker & R.P. Lin

Space Sciences Laboratory, UC Berkeley

and the RHESSI team

Space Sciences Laboratory, UC Berkeley

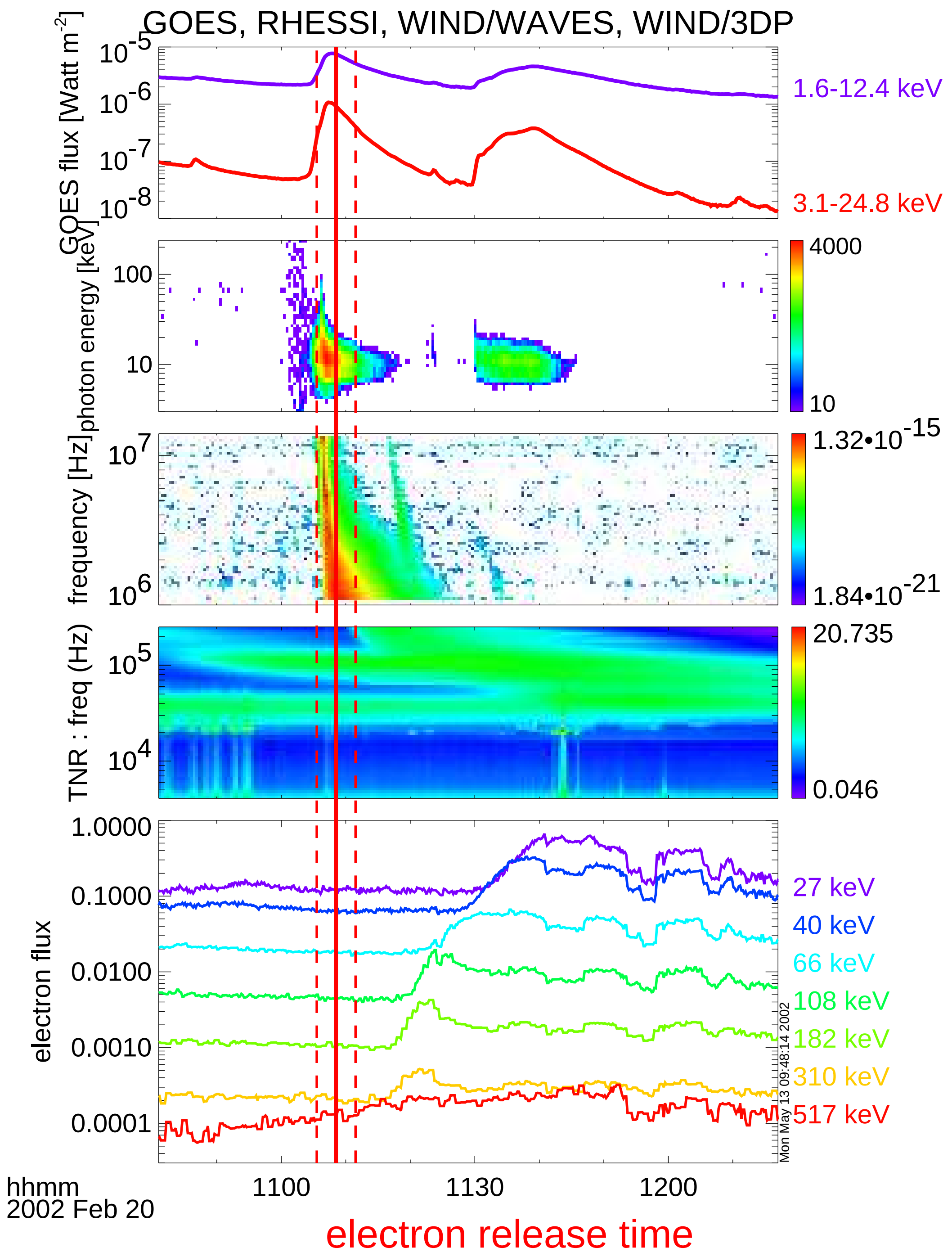
Goddard Space Flight Center

Paul Scherrer Institute (PSI), Switzerland

CONCLUSIONS

- non-simultaneous brightening of 'footpoints'
- spectra of 'footpoints' are similiar
- later flaring 'footpoint' might be related to the release of energetic electrons into IP space

Electron event at 1 AU: Feb 20, 11:05UT



electron release time
near Sun derived
from WIND/3dp onset times

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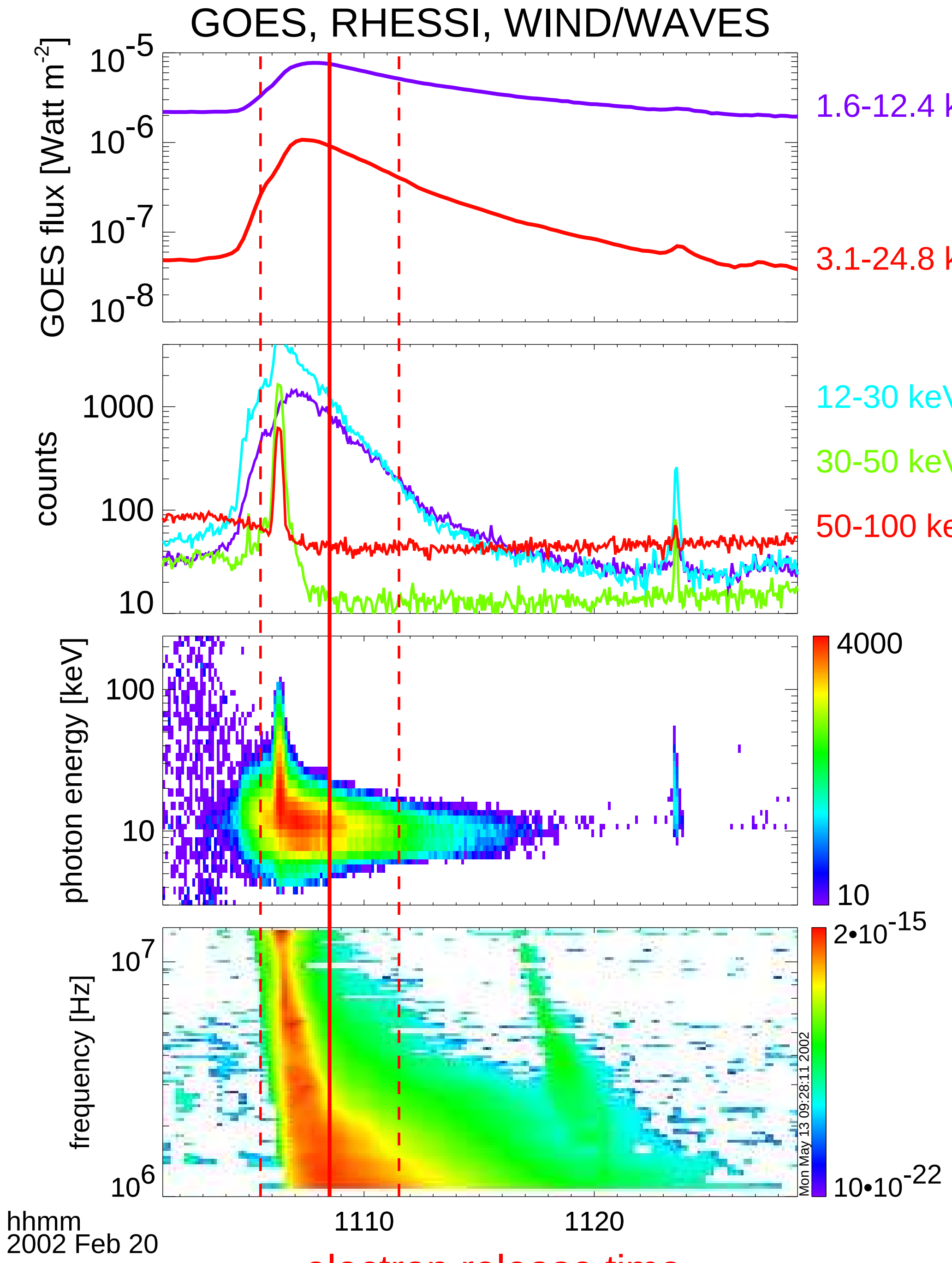

electron release time
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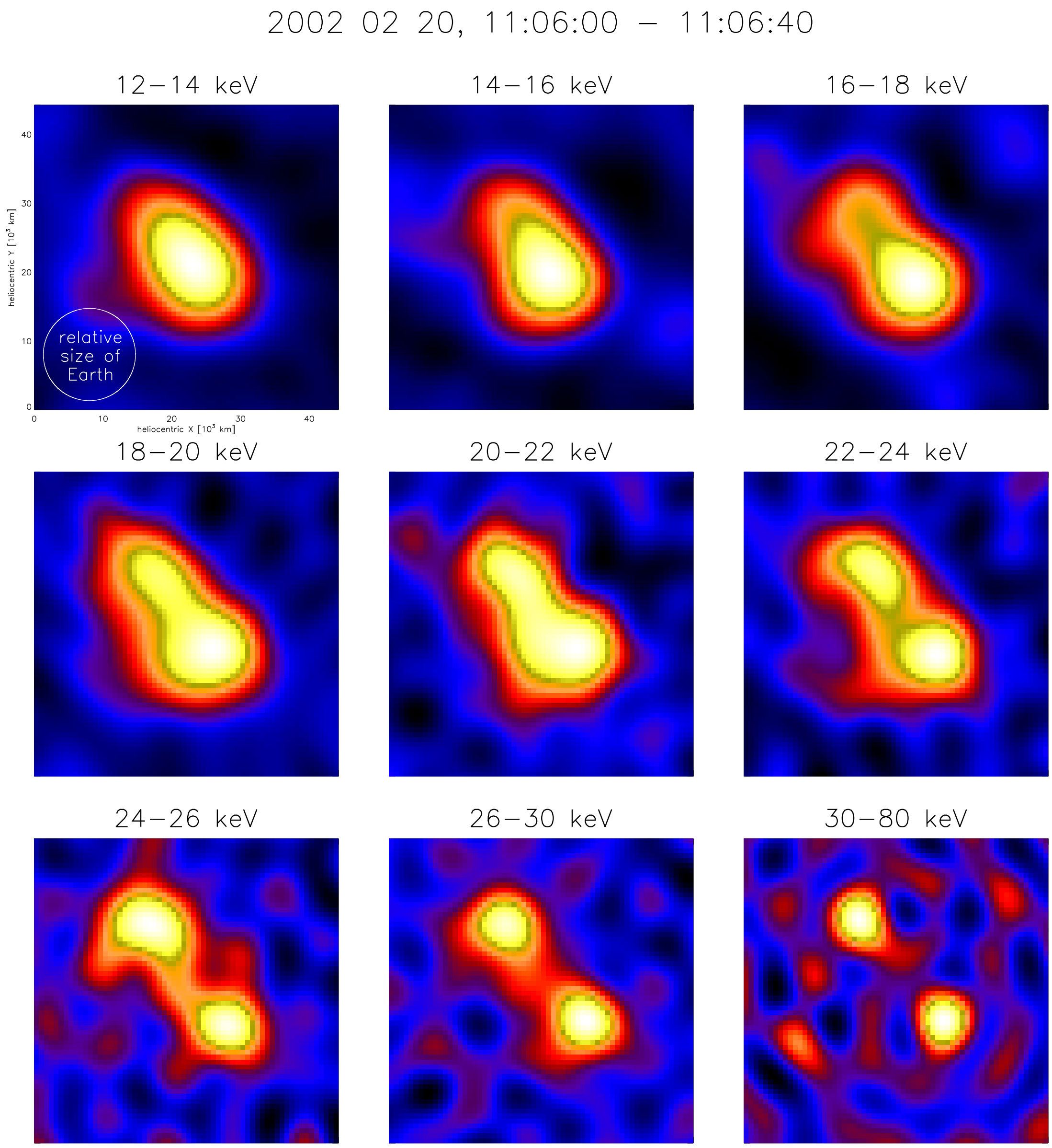
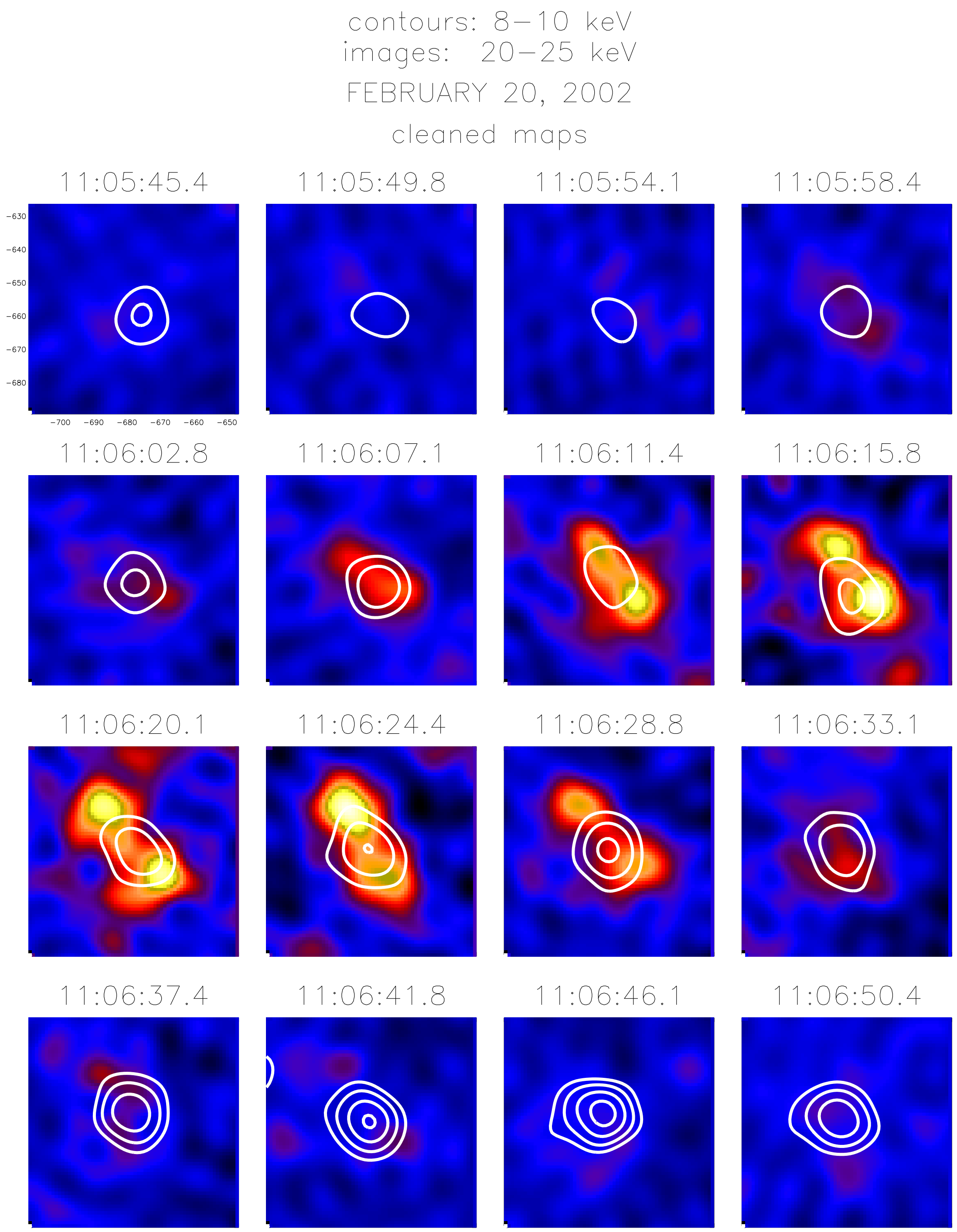
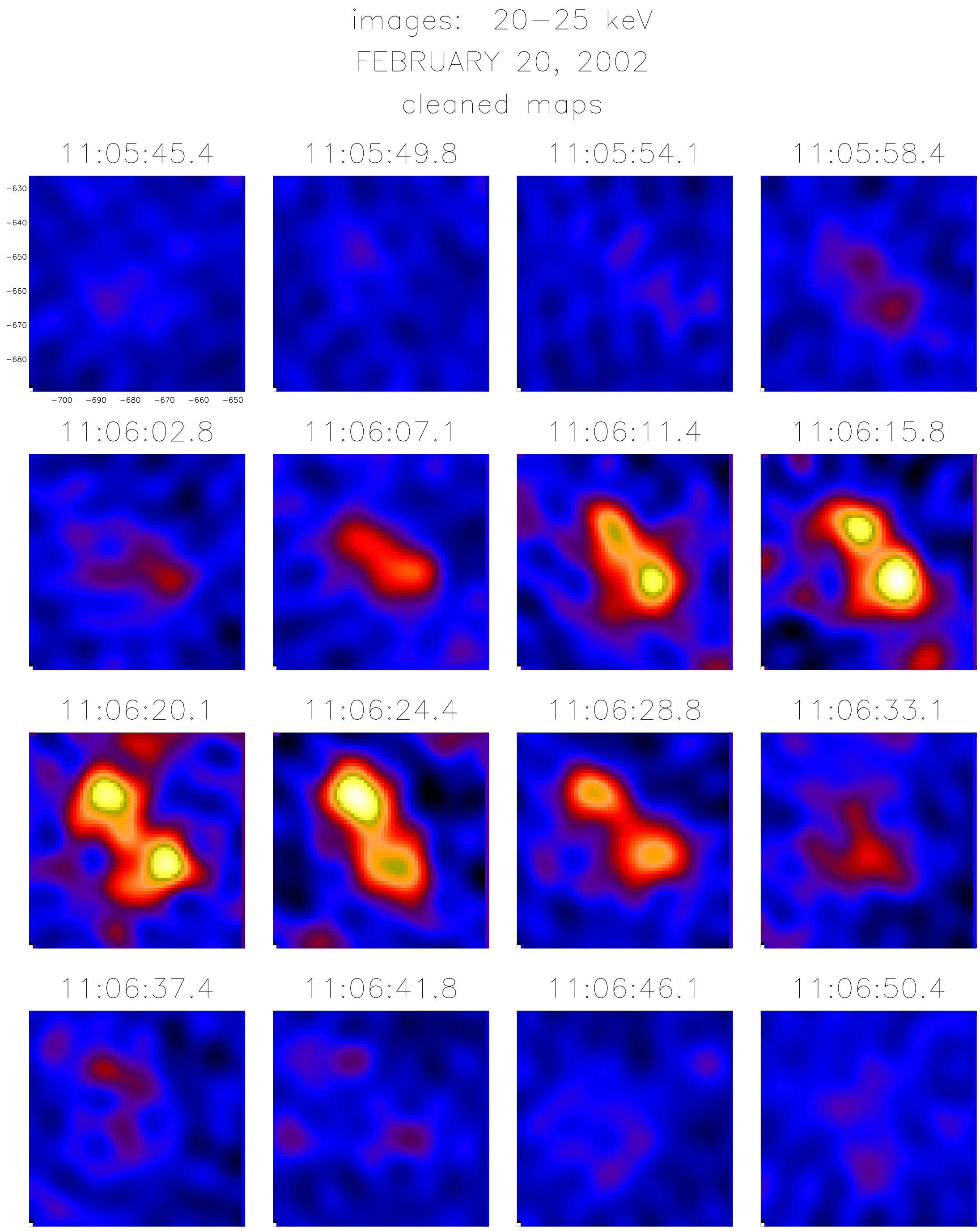
RHESSI imaging spectroscopy of HXR peak



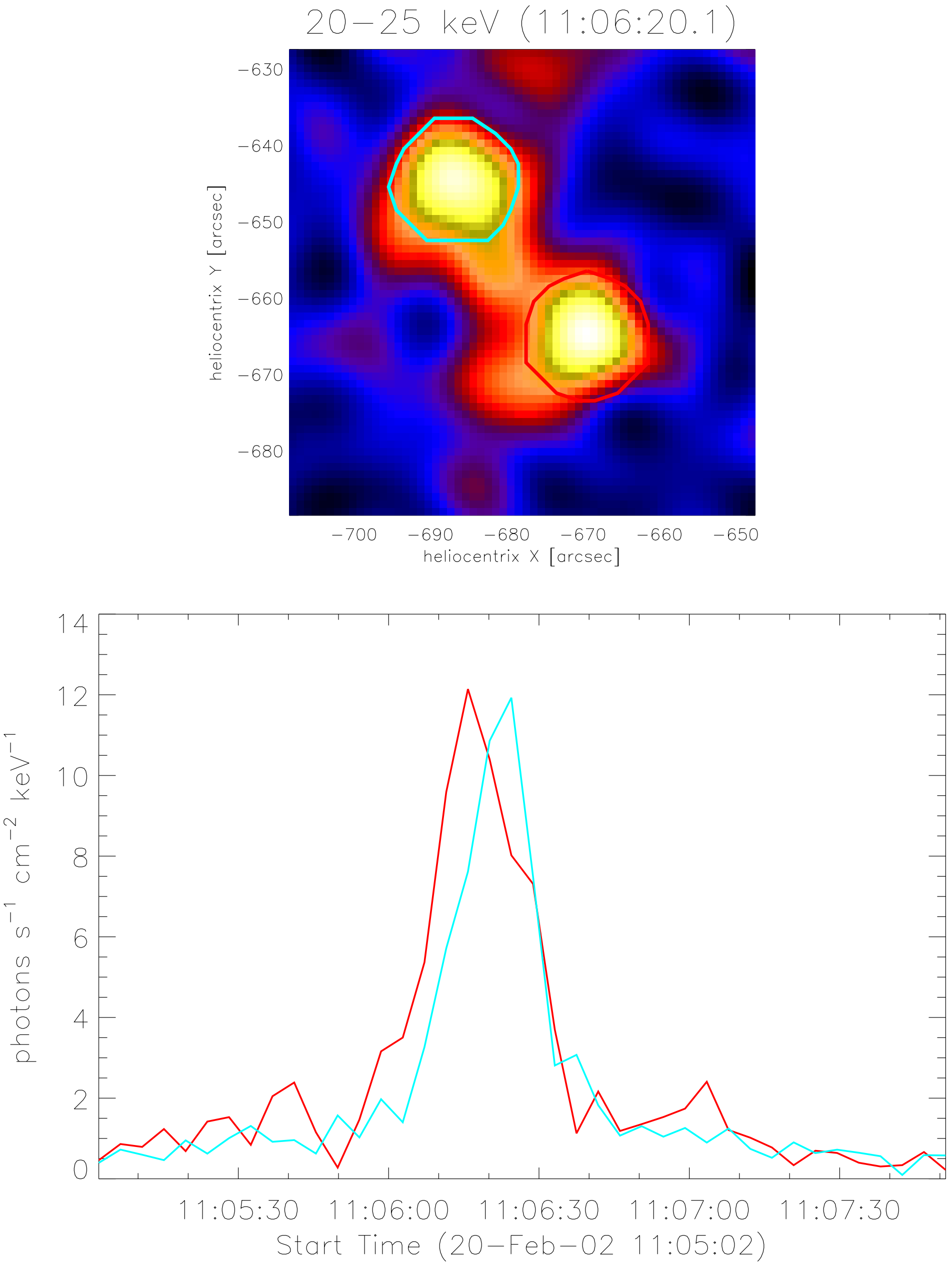
RHESSI images around HXR peak



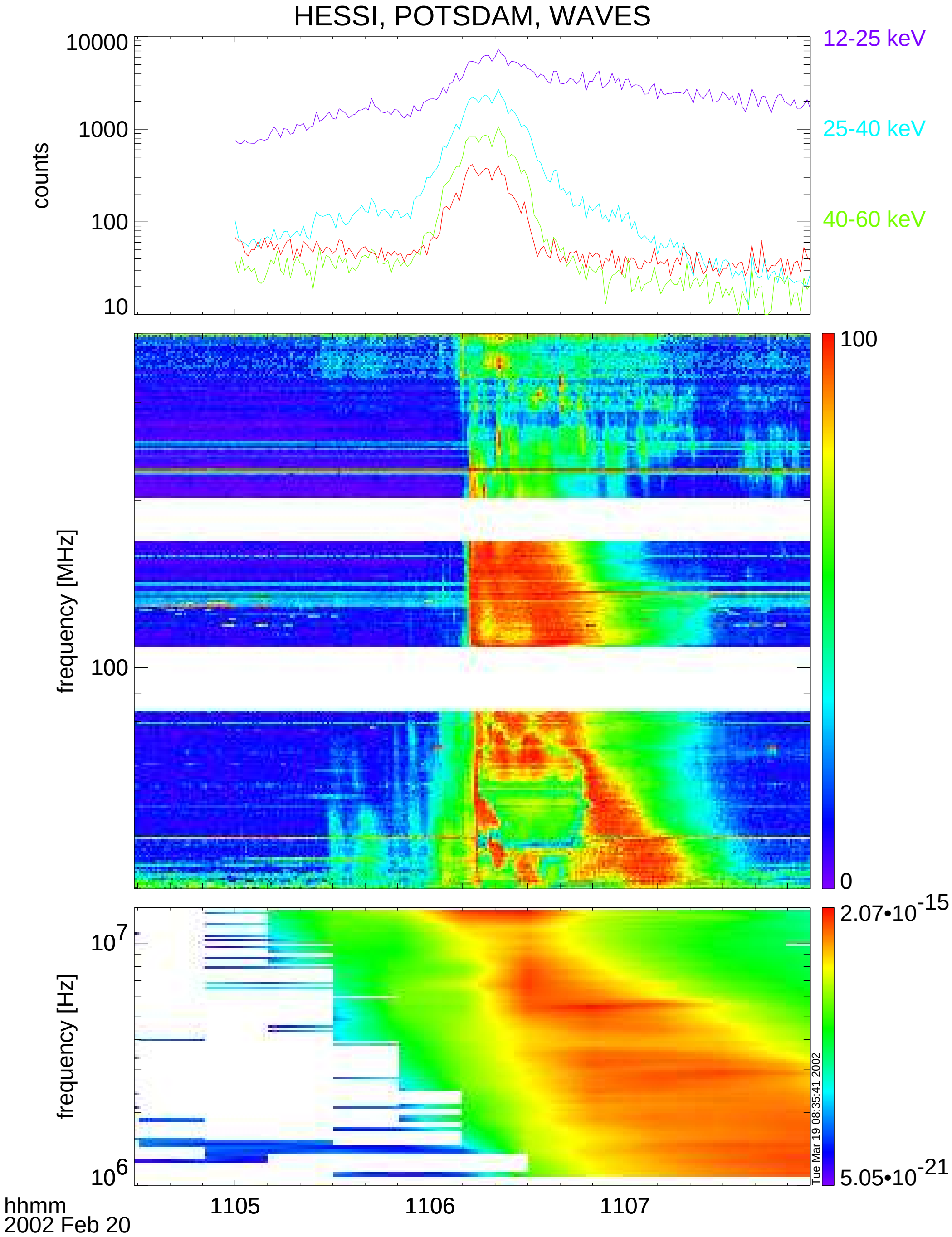
RHESSI images around HXR peak



Footpoints do not peak simultaneously



Main radio emission starts when second footpoints flares



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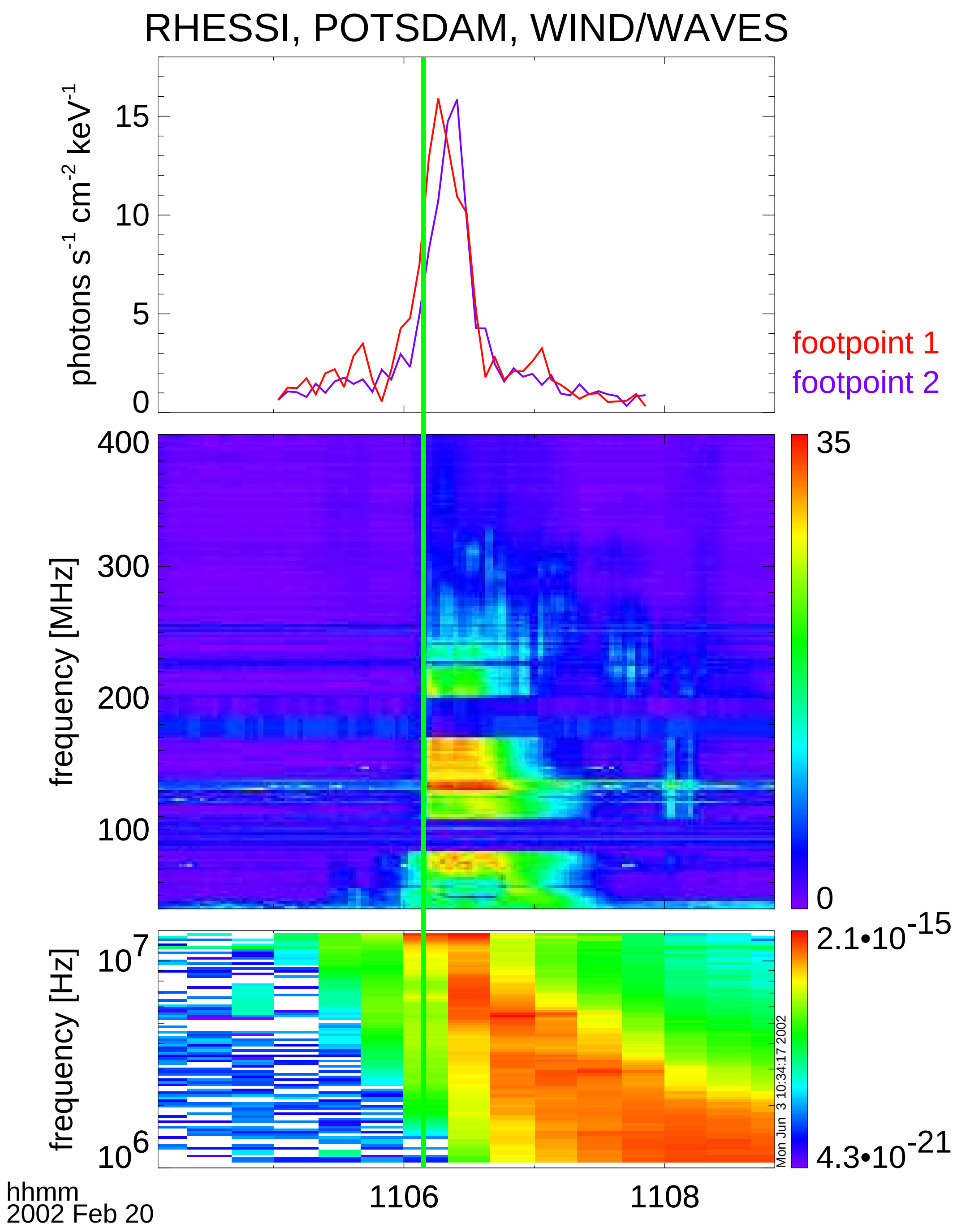
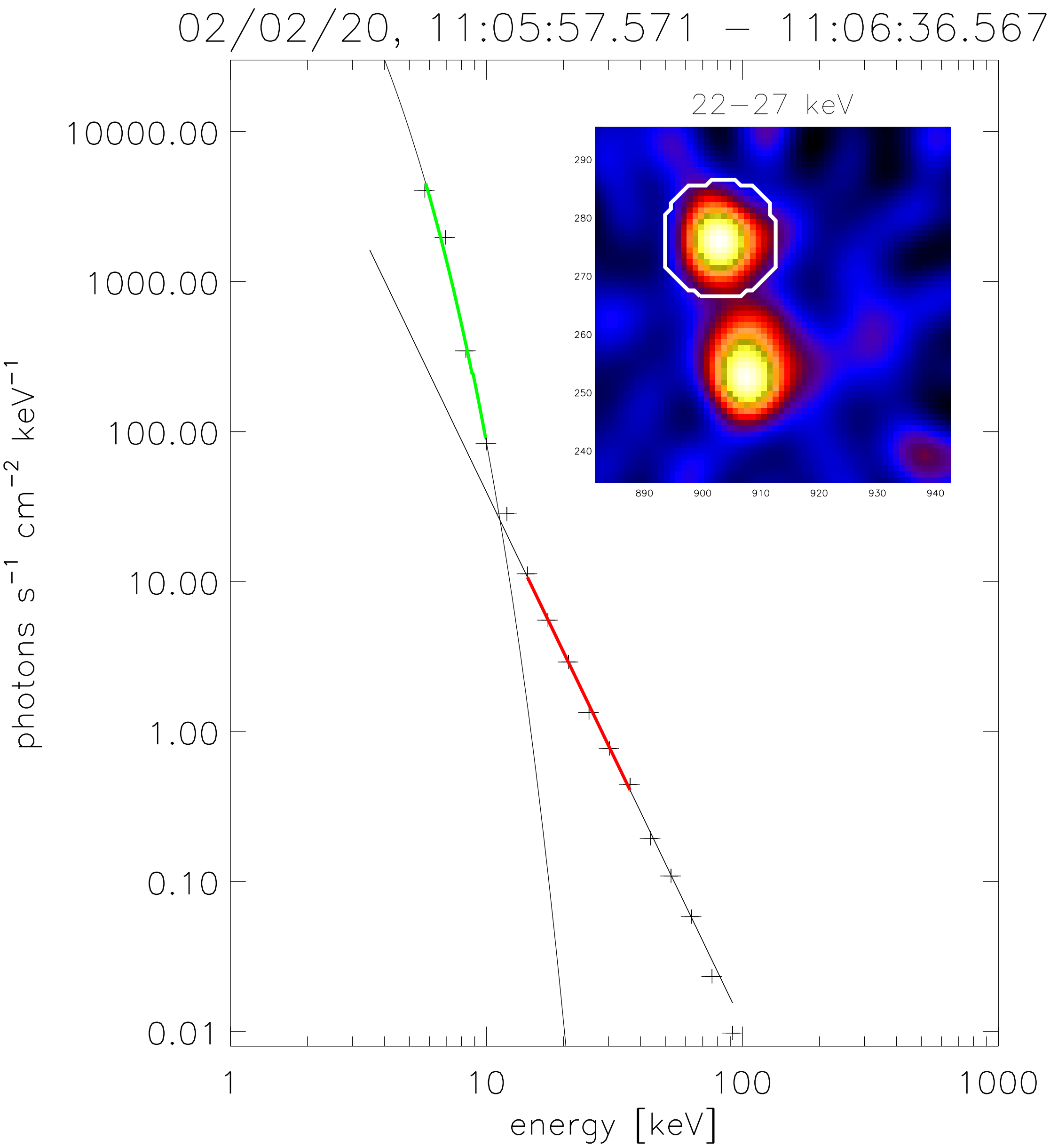


RHESSI imaging spectroscopy: HXR peak

slope at 13–40 keV: −3.54

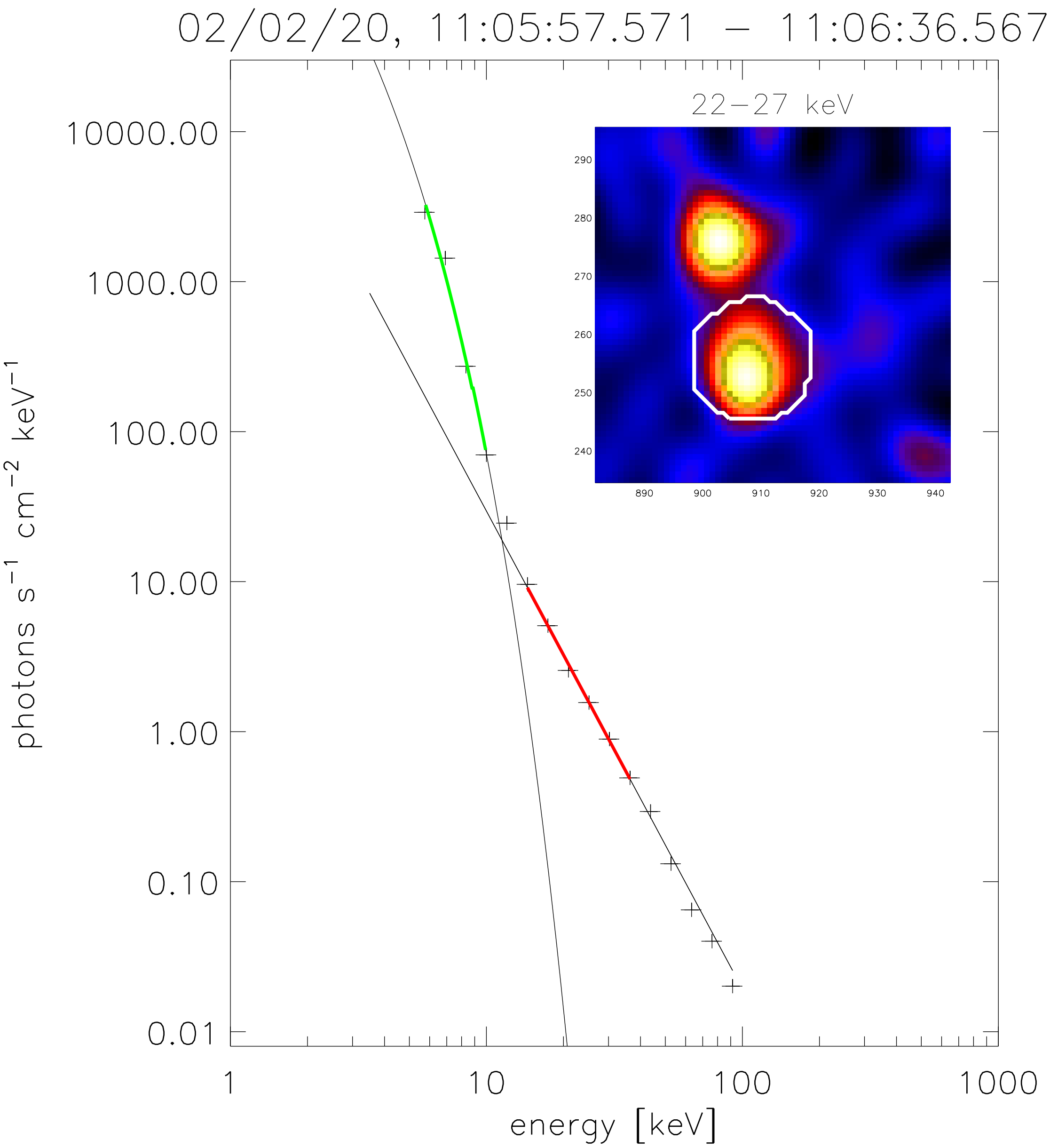
thermal fit: EM=2.25e+48 cm^{-3} T_e=1.23 keV=14.3 MK



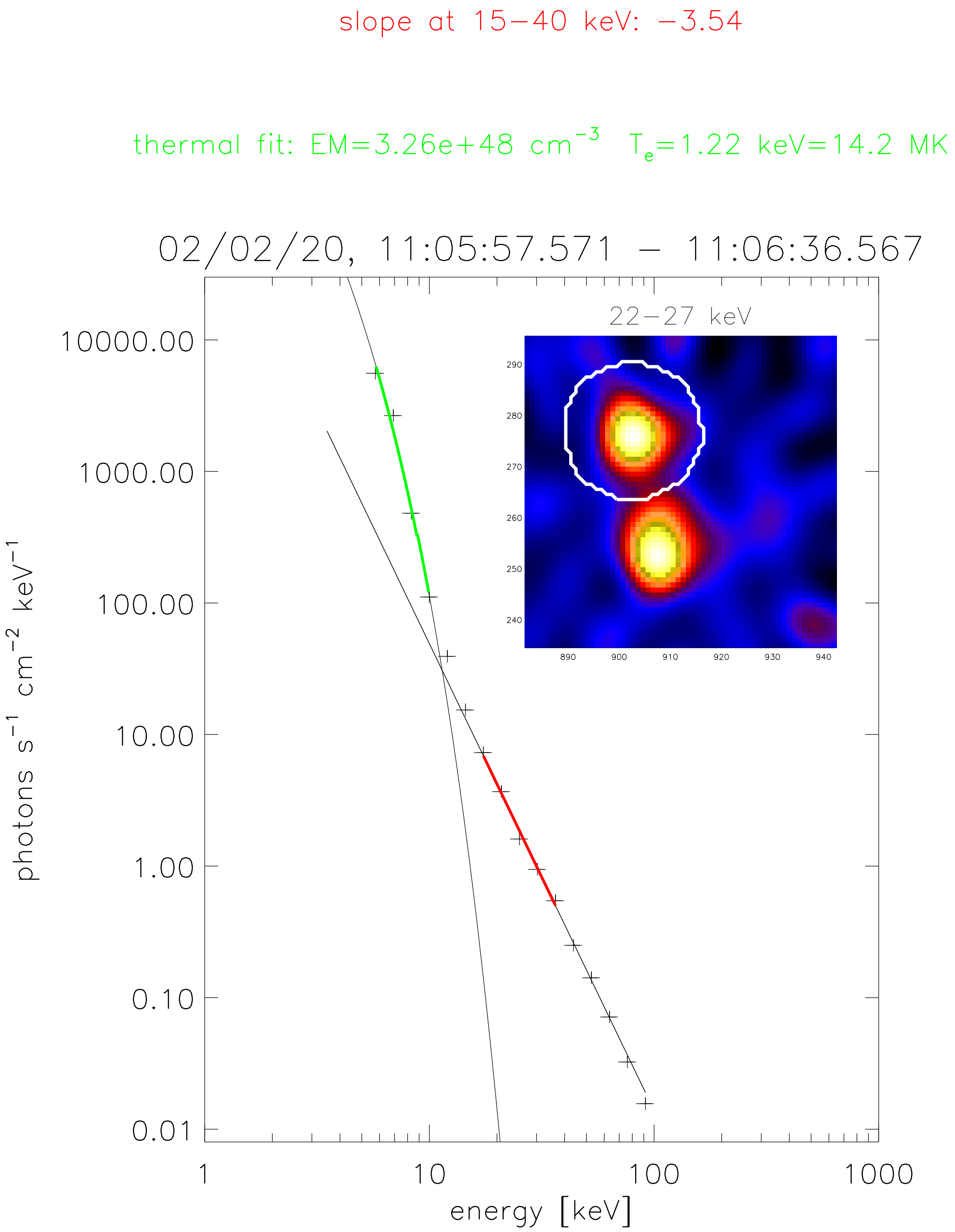
RHESSI imaging spectroscopy: HXR peak

slope at 13–40 keV: –3.18

thermal fit: EM=1.35e+48 cm^{-3} T_e=1.29 keV=15.0 MK



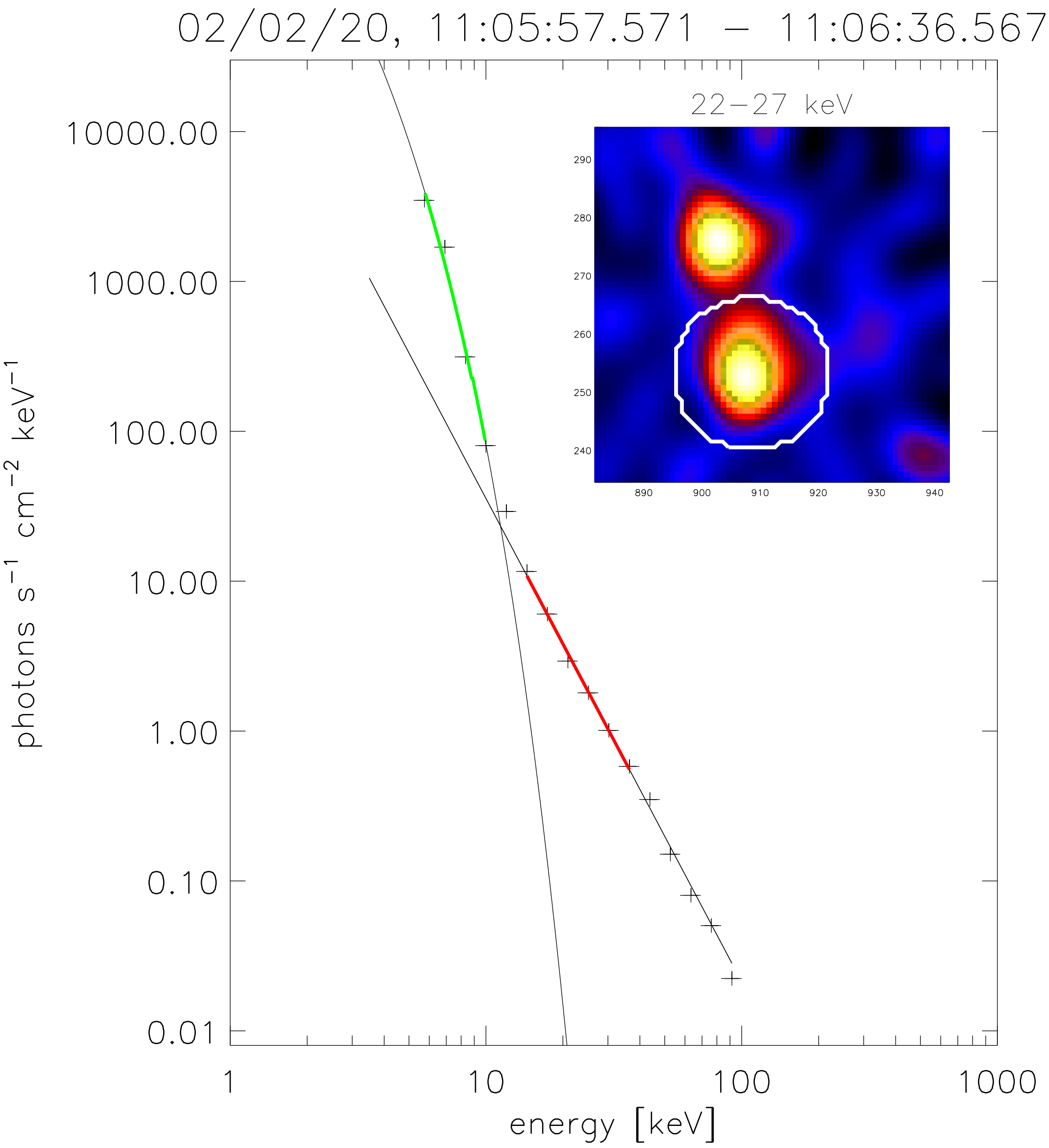
RHESSI imaging spectroscopy: HXR peak



RHESSI imaging spectroscopy: HXR peak

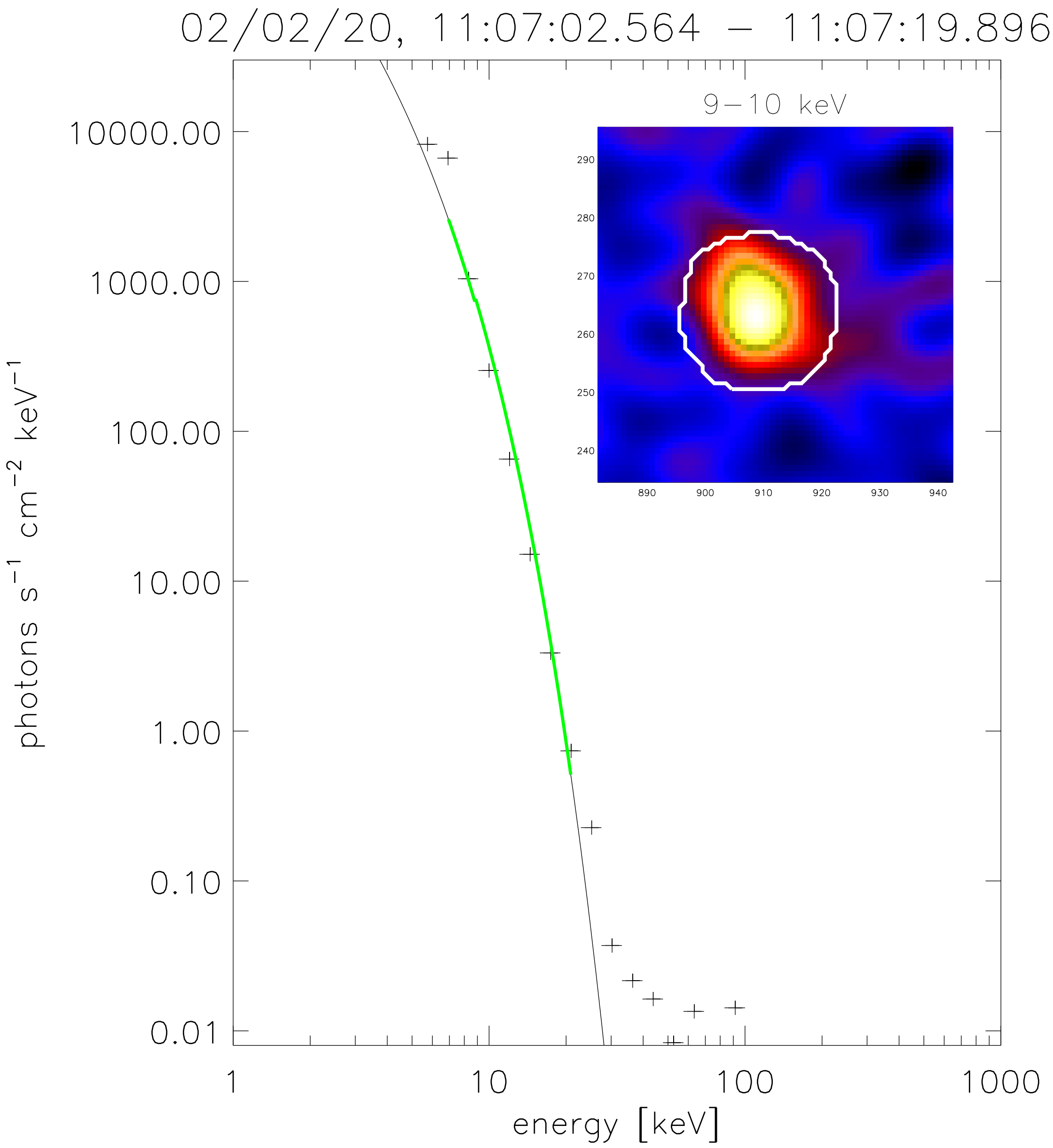
slope at 13–40 keV: −3.22

thermal fit: EM=1.67e+48 cm^{-3} T_e=1.28 keV=14.9 MK

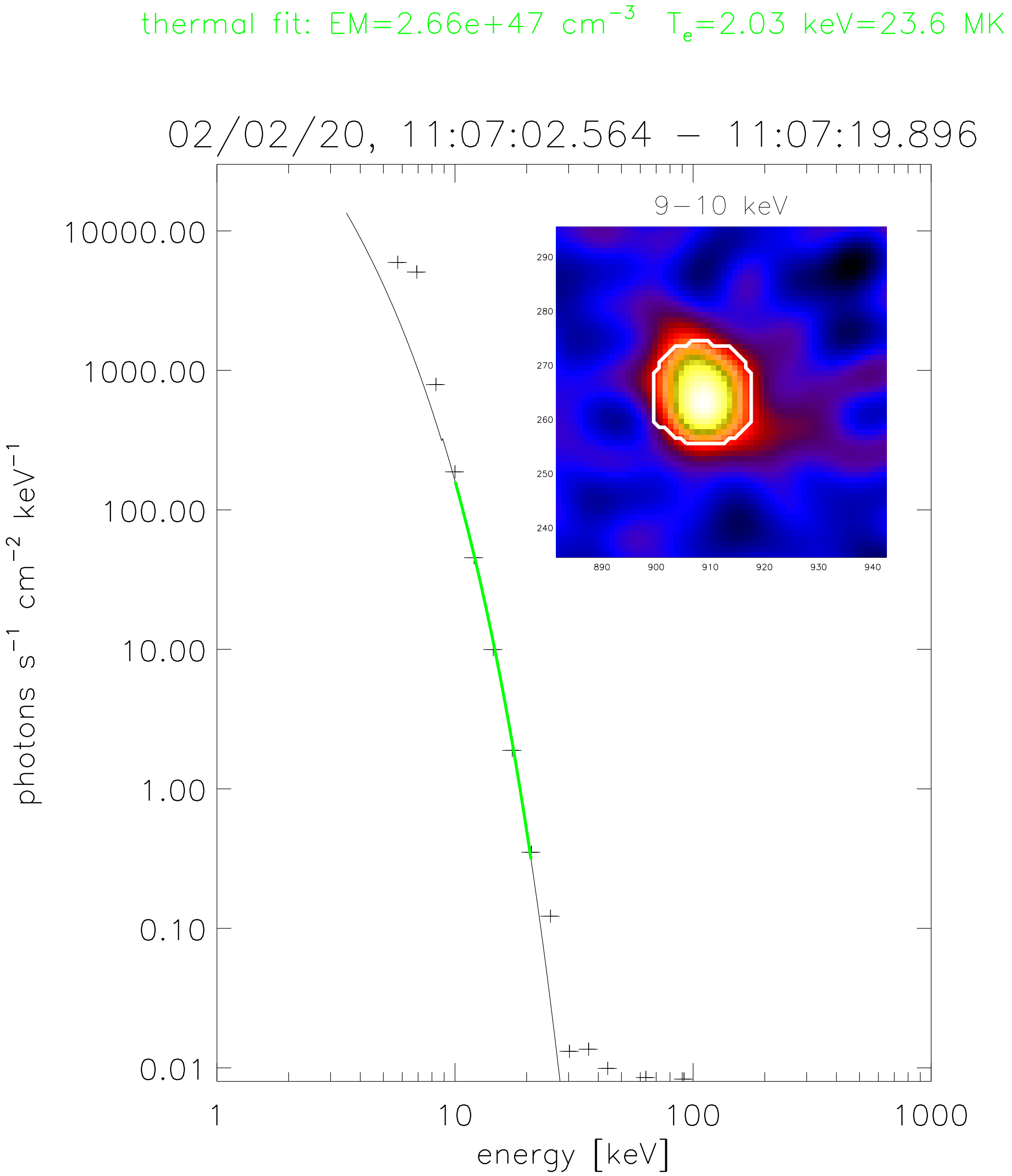


RHESSI imaging spectroscopy: after HXR peak

thermal fit: EM=7.86e+47 cm^{-3} T_e=1.91 keV=22.2 MK



RHESSI imaging spectroscopy: after HXR peak



Photon and electron spectrum: