



IACHEC: Thermal Supernova Remnant Working Group Report

*Paul Plucinsky on behalf of the IACHEC
Thermal SNR Working Group*



Thermal SNR Working Group

XMM-Newton RGS	Andy Pollock (ESAC)
Chandra HETG	Dan Dewey (MIT)
XMM-Newton MOS	Steve Sembay (Leicester)
XMM-Newton pn	Frank Haberl (MPE)
Chandra ACIS	Joe DePasquale, Paul Plucinsky (SAO)
Suzaku XIS	Eric Miller (MIT)
Swift XRT	Andrew Beardmore (Leicester)
Models	Randall Smith (SAO)

With special guest appearances from:

Martin Weisskopf (MSFC), Manabu Ishida(JAXA), & Terry Gaetz (SAO)



Status 2010

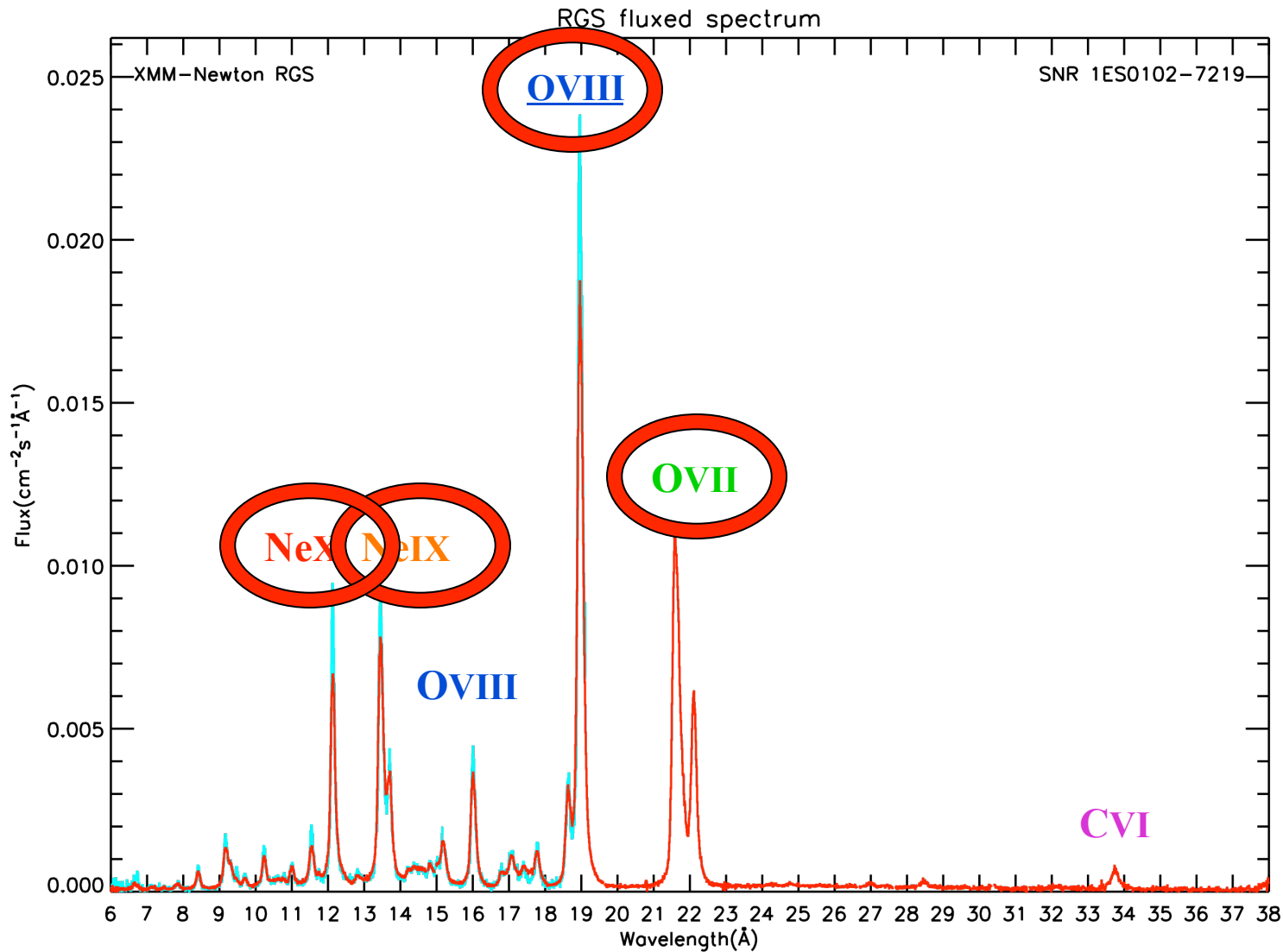
- significant encouragement (pressure) to publish the E0102 model in a journal other than SPIE
- one issue remaining is the identification of weak lines
- Andy and Randall argued that the identification as Fe lines is most likely incorrect, if incorrect what are these features ?
- Andy suggests they might be charge exchange of O with H, and perhaps Ne with H
- the identification or mis-identification of these weak lines does NOT affect our narrow calibration objective or determining the normalizations of the bright line complexes



Chandra X-Ray Observatory

CXC

XMM-Newton RGS Spectrum of E0102:



*Pollock
(ESAC)*

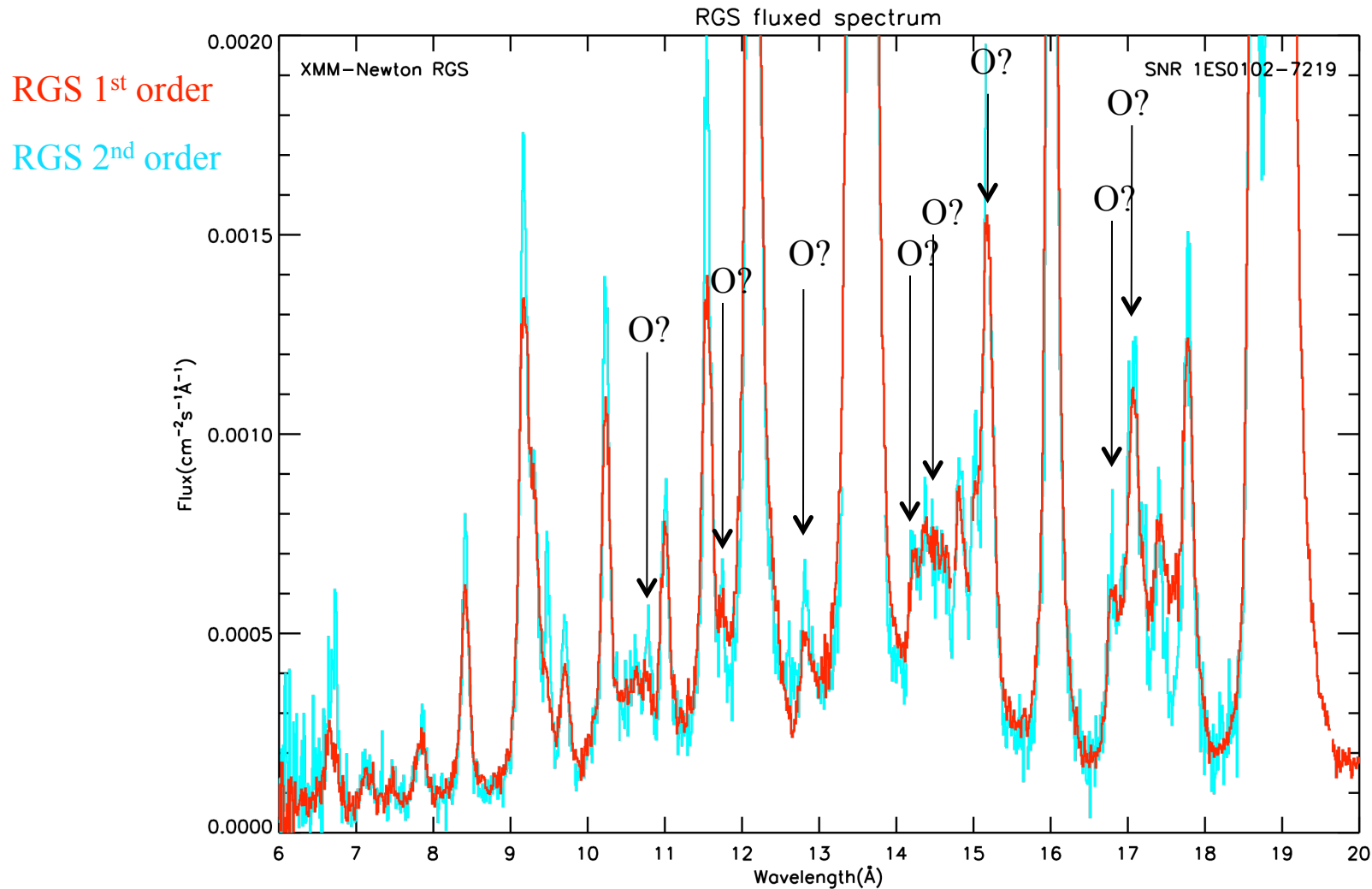
Relatively
simple
spectrum
dominated
by O & Ne,
little or no
Fe emission



What's New Since SPIE 2008:

- some weak O lines may have been misidentified as Fe

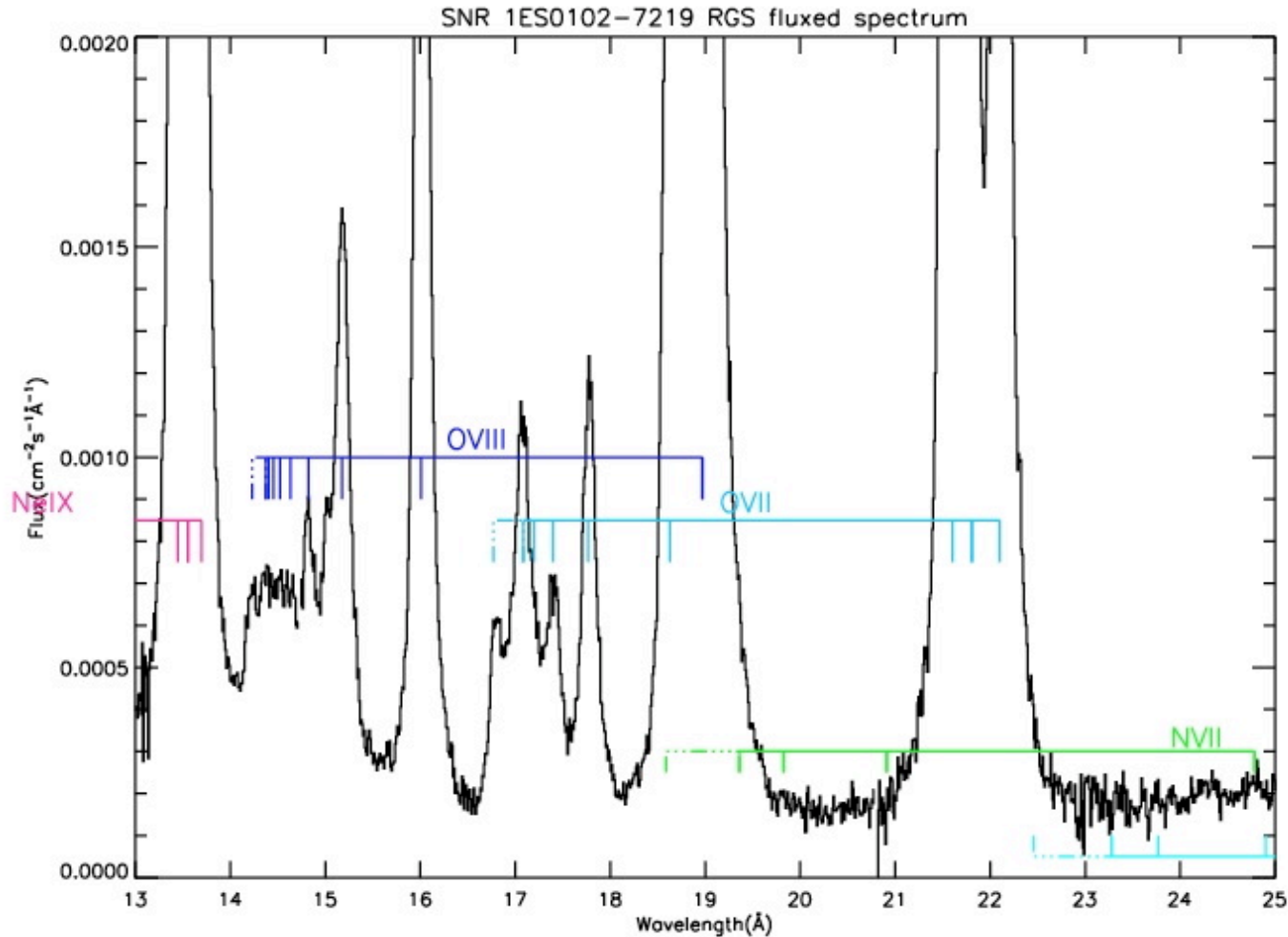
Pollock (ESAC)





Possible Misidentification of Weak Lines ?

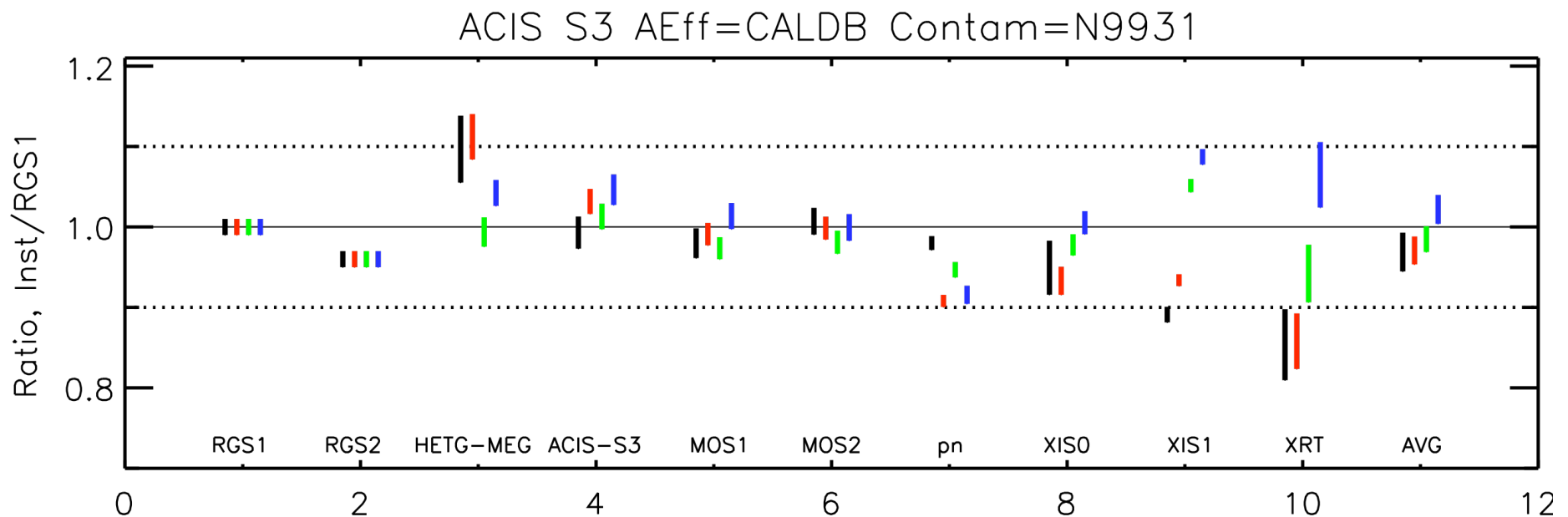
RGS spectra 13-25 Å from Pollock (ESAC)





Plan for 2010

- identify these lines as “unknown” and describe the possible explanations
- refit E0102 data from early in the respective missions with the standard model with the currently released calibration files
- write the paper for submission by mid-June
- we expect a result similar to the following:





Finally, SNRs other than E0102 !!

N132D:

- first choice of the working group
- N132D, LMC SNR, already used by XMM for calibration, spatially and spectrally more complicated than E0102, lots of ACIS, HETG, and RGS data. Sparse Suzaku data but hopefully that can be remedied
- Randall exclaimed “Do something with Fe in it !!”

Cas A:

- too large and too complicated spectrally and spatially
- also, see variability mentioned by Patnaude et al.

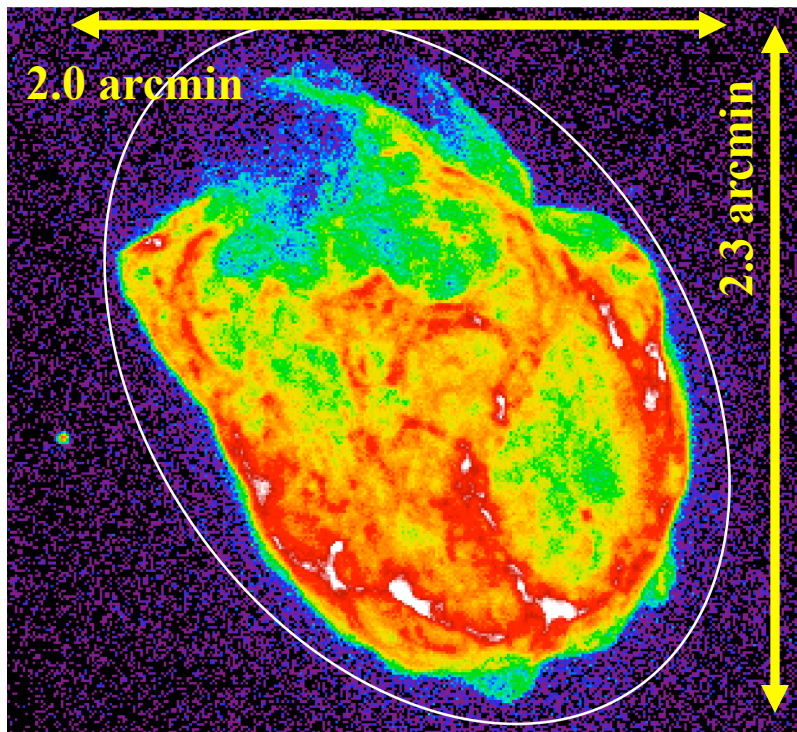
Tycho:

- the largest of all of the SNRs, significant off-axis effects, larger than one ACIS CCD
- provides strong lines from Si, S, Ar, & Ca from 1.8 to 4.0 keV, not an energy range in which we have significant problems



N132D: Brightest SNR in the LMC

- spatial, larger than E0102 and more complicated, absorption varies significantly across the remnant
- spectrum is significantly more complicated due to significant Fe emission



ACIS S3: 89 ks, fit with RGS model

