Report from the Thermal SNR Working Group

Paul Plucinsky on behalf of the IACHEC Thermal SNR Working Group

Thermal SNR Working Group

One of the "Standard candle" working groups.

This presentation is a summary report of this group's work:

XMM-Newton RGS   Andy Pollock & Matteo Guainazzi (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)

E0102: Update

• Group agrees that an update of the 2008 SPIE paper analysis is a worthwhile objective, but there is work to be done . The objective is write an IACHEC A&A paper similar to the clusters paper and the G21.5-0.9 paper.
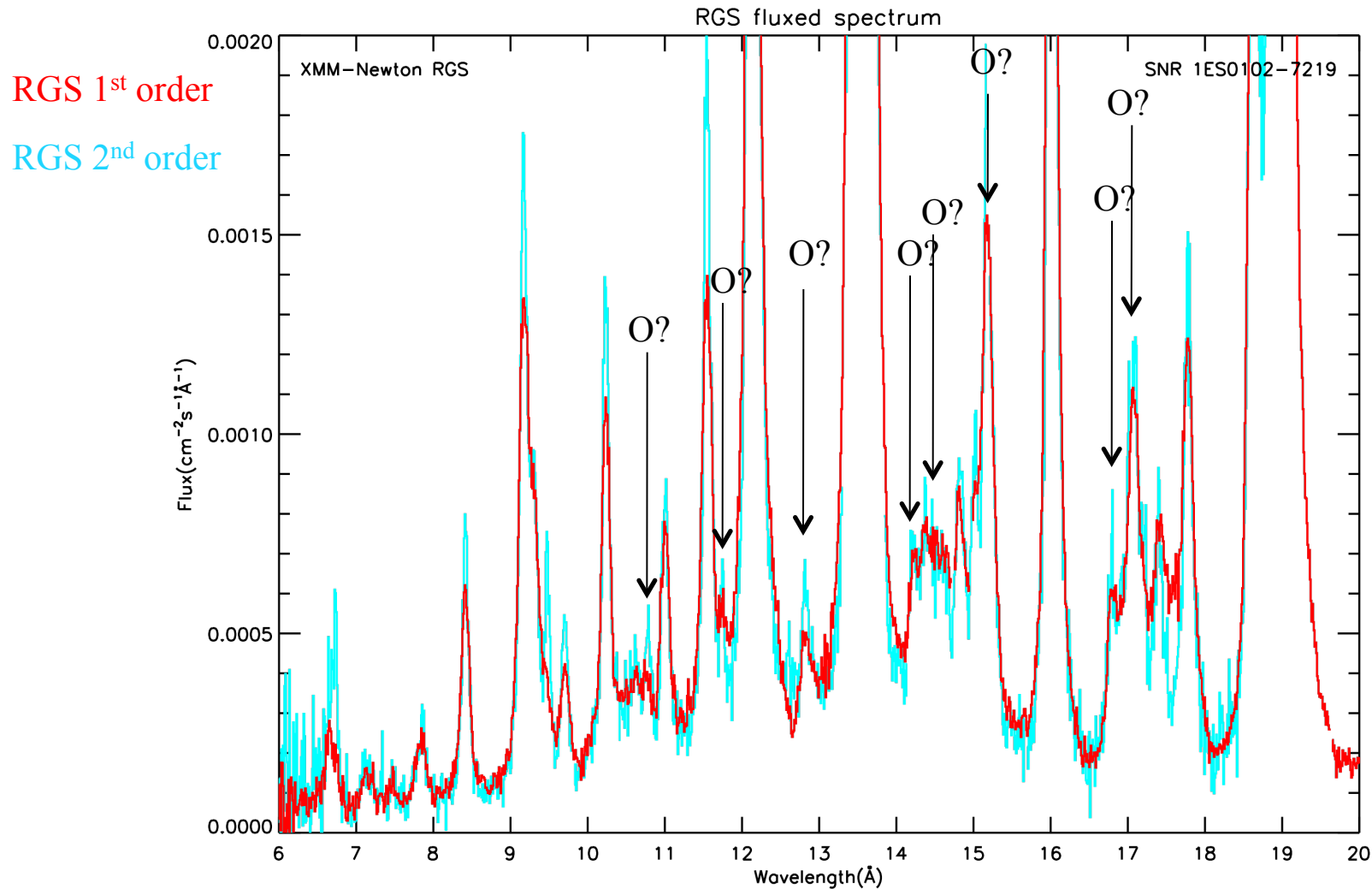
ACTIONS:

• ACTION #1: Adam F. will look at the higher quantum states of O and Ne and suggest possible lines to Andy P.

• ACTION #2: Andy P. will take these lines and fit them to the RGS spectra and attempt an model which has no Fe in it.

• ACTION #3: Adam F. will look at the Fe17, Fe18, & Fe19 lines included in the IACHEC v1.9 model and render a judgment on the physical consistency of the included lines.

• ACTION #4: Adam F. will consider if Si and S lithium-like ions are possible identifications.

• ACTION #5: The group will discuss and adopt a consistent methodology with regards to background modeling and use of the C statistic.

Identification of Weak Lines:

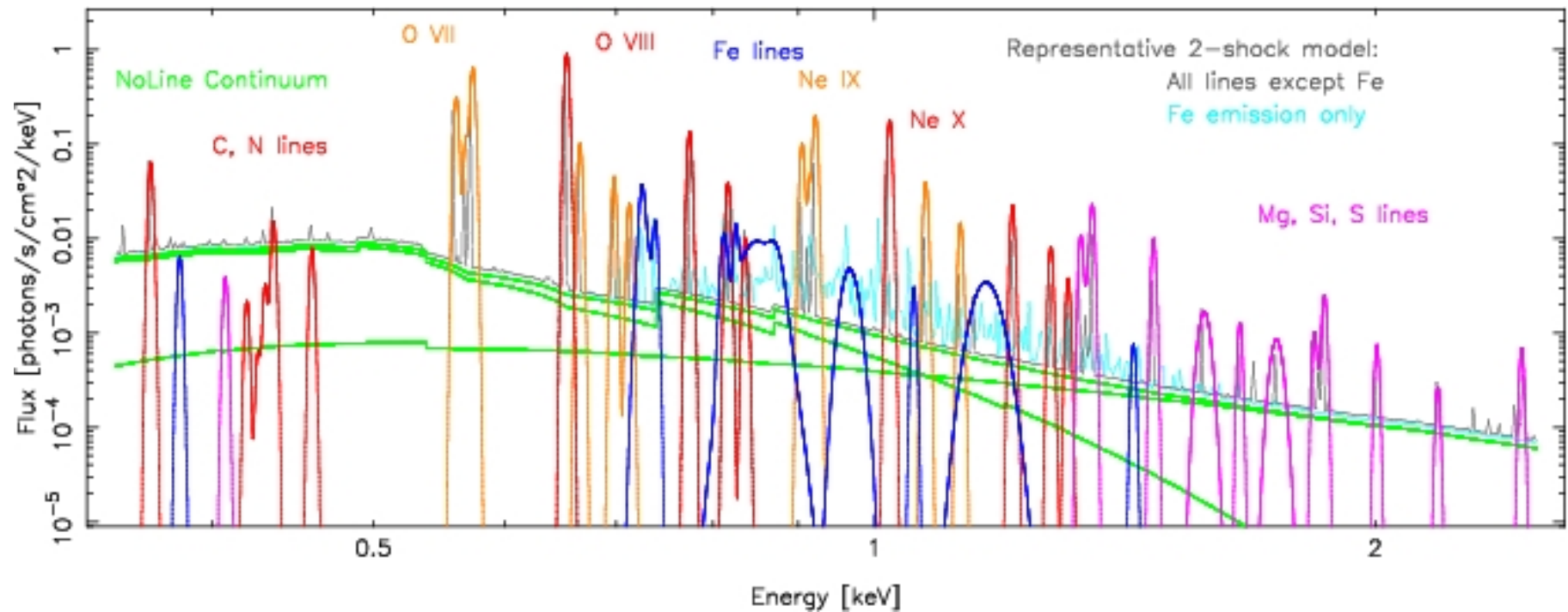• some weak O lines may have been misidentified as Fe

Pollock (ESAC)

RGS 1st order

RGS 2nd order

RGS fluxed spectrum

XMM-Newton RGS   SNR 1ES0102-7219

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Comparison of Empirical Model to vpshock: *Dewey(MIT)*

- 2 temperature vpshock model with & without Fe

- our E0102 model contains all of the bright lines included in the vpshock model
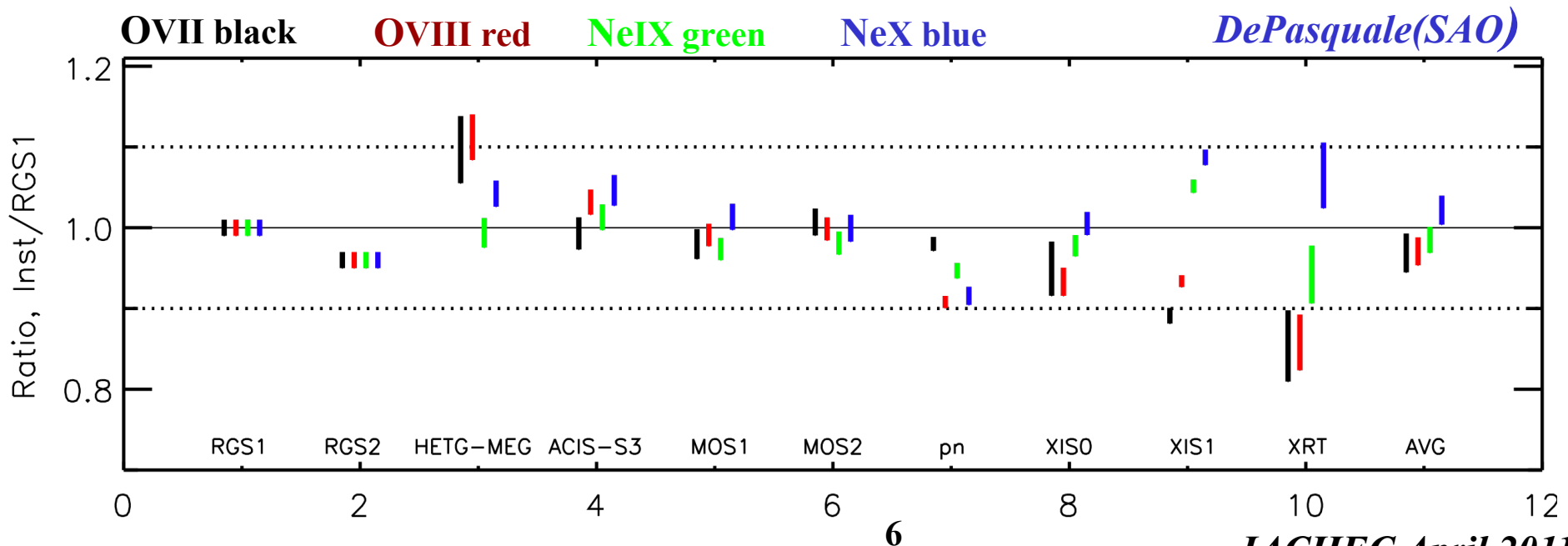
Comparison of Fit Results Using χ^2 and C Statistic:

• OBSID 3545, 8.0 ks observation, 57932 counts, max counts in a single channel is 1805 counts. Compare line normalizations in units of photons/cm^2 s

	χ^2	C Stat	Difference
O7	1.496E-03[1.459,1.533]	1.500E-03	+0.26%
O8	1.417E-03[1.386,1.448]	1.423E-03	+0.42%
Ne9	4.501E-03[4.411,4.591]	4.525E-03	+0.53%
Ne10	1.279E-03[1.246,1.314]	1.285E-03	+0.47%

OVII black   **OVIII red**   **NeIX green**   **NeX blue**   *DePasquale(SAO)*

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6

N132D: Just the Beginning

• Group agrees that N132D could be a useful "check" of the calibration.

ACTIONS:

• ACTION #1: Andy P. will define the optimal extraction regions for the RGS data.

• ACTION #2: Matteo and Martin S. will complete the "RGS 110 Gaussian" model by 29 April and distribute to ACIS, MOS, pn, & XIS teams.

• ACTION #3: ACIS, MOS, pn, & XIS will recommend lines above 2.0 keV to be included in the model by 6 May.

• ACTION #4: Martin S. and Matteo will finalize model by 13 May

• ACTION #5: Andy P. will provide model and RGS results to Dan Dewey to compare to HETG data by 13 May

• ACTION #6: ACIS, MOS, pn, & XIS will fit with the new model by 17 June so that results can be compared at the XMM meeting Berlin.
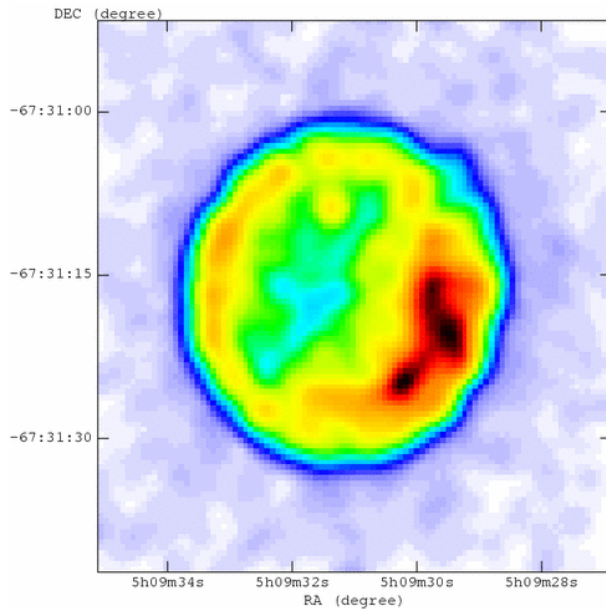
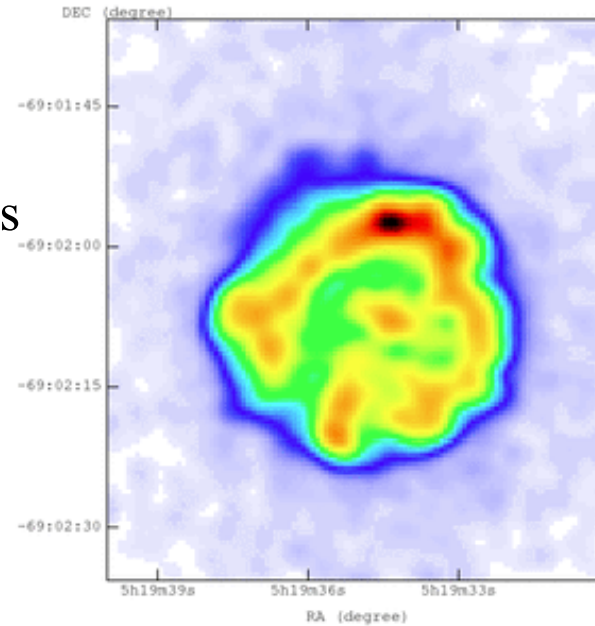*Paul Plucinsky*   *IACHEC April 2011*

Chandra X-Ray Observatory

SNR 0509-67.5

¼ as bright as N132D
0.8 as bright as E0102

SNR 0519-69.0

1/10 as bright as N132D
1/4 as bright as E0102

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