Status of SG41

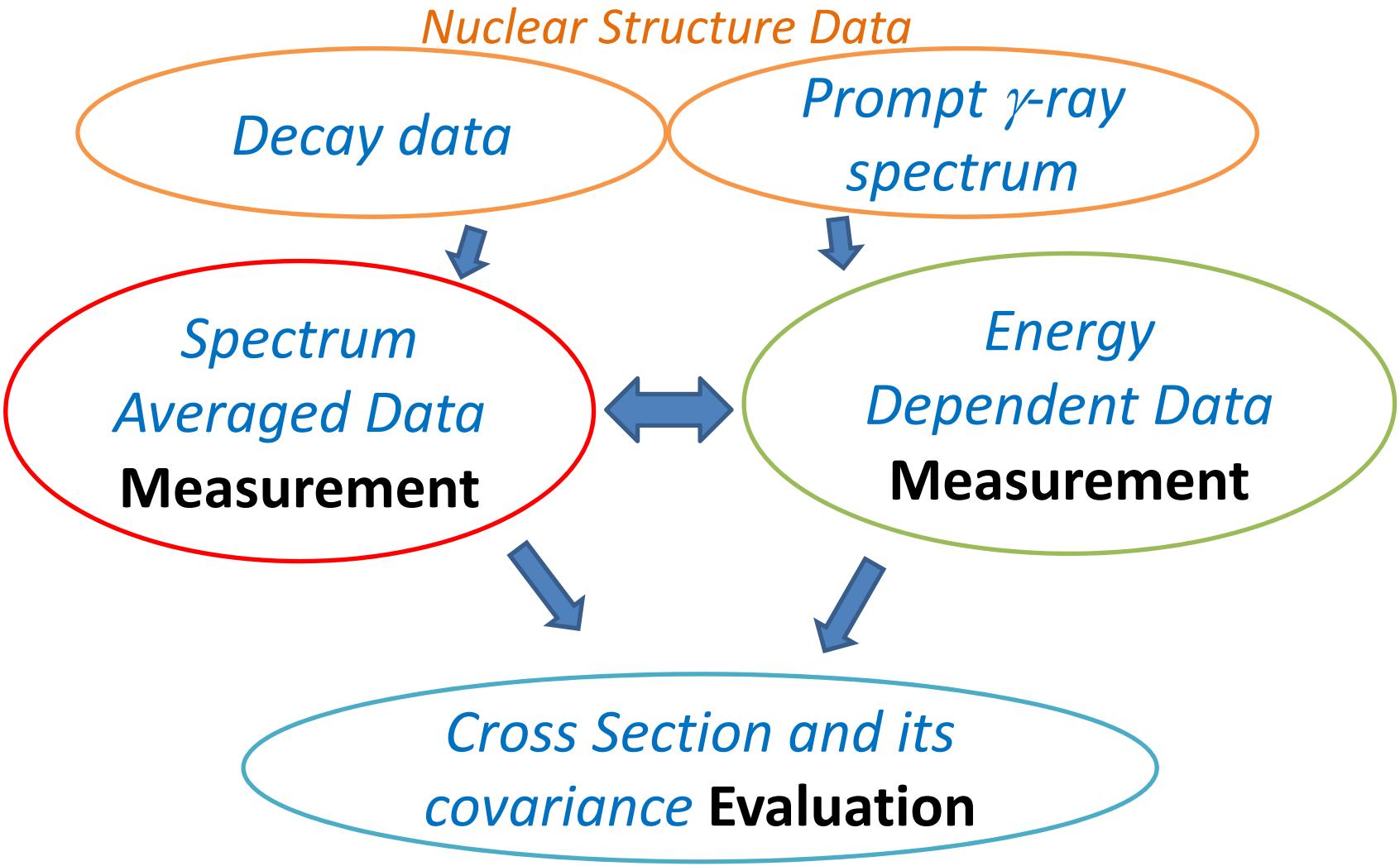
Improving Nuclear Data Accuracy of ^{241}Am and ^{237}Np capture cross sections (INDA)

A first step toward an international framework to facilitate collaborations for improvement of nuclear data accuracy

Justification for a Subgroup

The experts of SG-31 reviewed state-of-the-art experimental techniques for nuclear data measurements and the current status of nuclear data covariance evaluations for important nuclear data, which were identified by SG-26 for developing innovative nuclear reactor systems. It was shown that at present there is still a serious gap between required accuracy and current accuracy. Bridging this gap represents a major challenge for all file projects. Therefore, there is an incentive to organize an international collaborative framework to improve the accuracy of evaluated data. Under this framework, all of the relevant forefront knowledge and techniques of energy dependent cross section measurements, spectrum averaged experiments, nuclear structure data, nuclear data and associated covariance evaluations could be suitably integrated. In order to test the concept and assess the effectiveness of such a framework, the SG41 focuses on two specific examples, i.e. the thermal and fast neutron capture cross sections of ^{237}Np and ^{241}Am. For these cross sections, which are of interest to nuclear waste managements, lessons have been learned from past programmes, experimental data using state-of-the-art techniques are available and also new experimental programs are going on in different countries, under different file projects.

Relation of four teams



Relevance to Evaluated Data Files

Recommendations for developing
higher accuracy Evaluated Data Files

Time-Schedule and Deliverables:

July, 2014, Starting the SG activities
May, 2015, Meeting of four teams on item 1, 2, 3, and 4.
July, 2015, Written Reports on assessment items 1, 2, 3, and 4.
December, 2015, Written reports on updated cross sections and covariance by each team.
May, 2016, Meeting of all teams for items 5 and 6.
December, 2016, Final Report of SG

Total (2.5 years)

To be discussed in this WS

SG41 Member List

Subgroup Monitor	Subgroup Coordinator	Secretary
P. Schillebeeckx (JEFF)	*H. Harada (JENDL)*	*O. Cabellos (NEA)*

**Experts on Energy Dependent Data*

P. Schillebeeckx (IRMM), D. Cano-Ott (CIEMAT), M. Jandel (LANL),
J. Hori (Kyoto Univ.), A. Kimura (JAEA)

**Experts on Spectrum Averaged Data*

M. Rossbach (Julich), A. Letourneau (CEA Saclay), G. Noguere (CEA Cadarache),
P. Leconte (CEA Cadarache), T. Sano (Kyoto Univ.), L. Jiang (CIAE), G. Žerovnik (IRMM)

** Experts on Nuclear Structure Data*

M. Kellett (CEA Saclay), A. Sonzogni (BNL), H. Iimura (JAEA)

** Experts on Evaluation and Covariances*

O. Iwamoto, (JAEA), T. Kawano (LANL), N. Otsuka (IAEA)

Team Leader

A new member A. Ignatyuku (IPPE)

1st WS of SG41 (INDA)

Organisation for Economic Co-operation and Development
Nuclear Energy Agency

WPEC SG41

"Improving nuclear data accuracy of Am-241 and Np-237 capture cross-sections"

Agenda

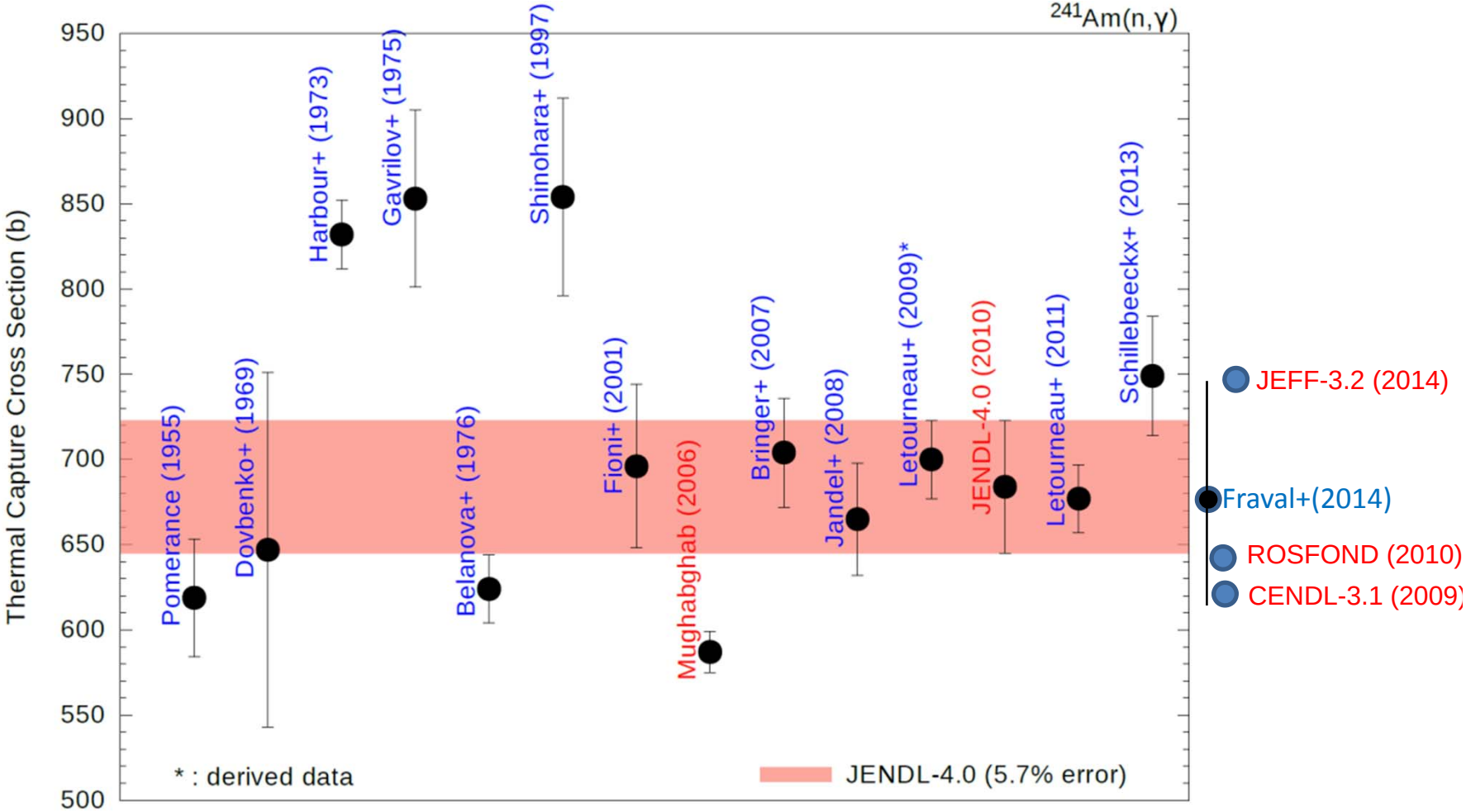
NEA
NEA Headquarters, Issy-les-Moulineaux
May 18-20, 2015

H. Harada:
Introduction, Target and Goal

O. Iwamoto:

Assessment of evaluated cross sections and covariance data of Am-241 and Np-237 capture cross sections

^{241}Am thermal capture cross section



Laboratoire National Henri Becquerel

LNHB PUBLICATIONS OF DECAY SCHEME DATA

Real WS including New Input

Deep discussions

Identified some physical reasons

Explaining discrepancy between data

Decay data

Post-irradiation in MELUSINE/CEA

Activation and pile-oscillation in MINERVE/CEA

Spectrum Averaged Data

Measurement

Energy Dependent Data

Measurement

FRM II

Budapest

cold neutron beam

JRR-3/JAEA

JMTR/JAEA

KUCA/Kyoto (Japan)

Thermal Resonance Integral

Activation method

ANNRI/J-PARC (Japan)

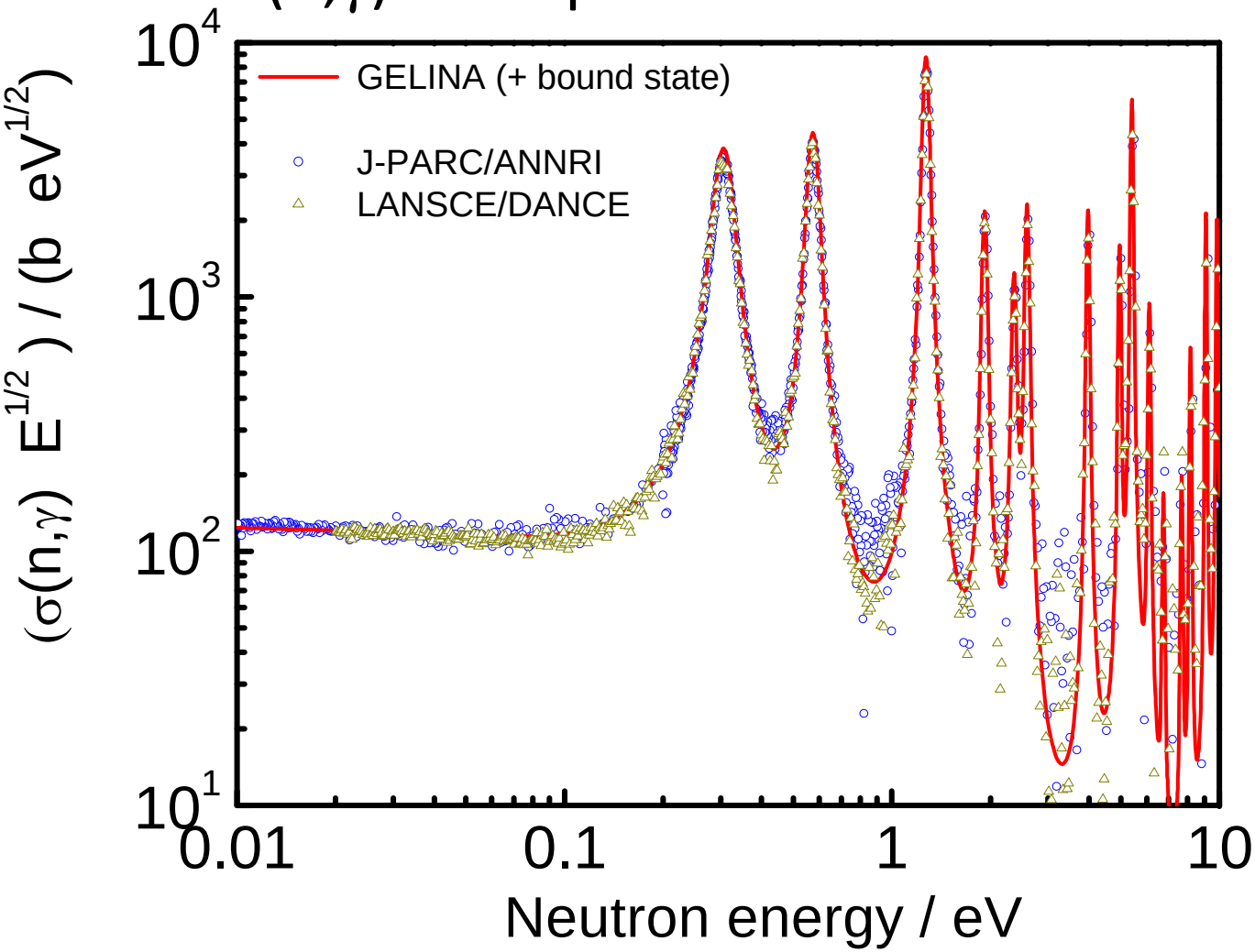
Gelina/IRMM (EU)

DANCE/LANL (USA)

n_TOF/CERN (EU)

KURRI-linac (Japan)

^{241}Am(n,γ) : comparison with literature data



Shape (energy dependence) agrees well → normalization?

Cold n data + G. Westcott factor + X-ray emission prob.

Activation data + Westcott factor

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May, 2016, Meeting of all teams.
December, 2016, Final Report of SG

Total (2.5 years)