

DE LA RECHERCHE À L'INDUSTRIE

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CIELO views from CEA

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CIELO meeting Geel

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A Lot !

- Evaluated data (xs) for the big 3, in the resonances and in the continuum.
 - Isotopic line evals. in a consistent way in the continuum (see Romain)
 - Improved microscopic modeling of PE for (n,xn) (DAM)
 - Improved evals in the RR (see Noguere & Leal)
 - Profit from CEA benchmark feedback (MASURCA, PROFIL,...)
- Covariances for the big 3 with CONRAD (resonances) and TALYS (continuum)
 - Includes constraints from CEA integral expts. (see de Saint Jean)
 - BFMC coupled with TMC for the continuum (DAM+NRG)
- PFNS, nubar and gamma for the big 3
 - With FIFRELIN FF decay (see Litaize)
 - With Los Alamos model with proper pre-fission neutron emission component from TALYS (DAM)
- New experimental data on PFNS (see Sardet) , prompt γ , fission yields, (n,xn) xs

How can the CEA profit from CIELO ?

- Adopt new good ideas into our evaluation processes
 - Refined statistical modeling of xs (Capote, Kawano)
 - Refined direct reaction modeling (Thompson)
 - Cross comparisons of models for PFNS, nubar & gamma
 - QA through automation of the evaluation process (NRG T6)
 - Work on ^{238}U resonances (Schillebeeckx)
 - Evaluation methodologies (Herman, Leeb,...)
 - New formats (GND)
- Include new experimental constraints into our evaluation processes
 - Capture (RPI, Vienna AMS, nTOF, LANL...)
 - (n,xn) (Geel+Strassbourg, ...)
 - Gamma and neutron spectra (Geel, LANL...)
- Networking: collaborating with the best of the ND community.
 - Meeting like the present one stir and foster collaborations

- CIELO produces **parts** of evaluated files (resonance xs, continuum xs, fission neutrons and γ) **independently**.
 - What about the integral performance of the assembled files ?
 - Ex: strong correlation between fission xs and nubar beyond the precision of differential experiments. Nubar modeling depends on multi chance fission xs.
 - What about the integral performance of such files for mixed material benchmarks ?
 - Yet, CIELO provides good **incentive to work harder on error compensations**.
- Much work is needed to turn independent sections of files into real files
 - At CEA, continuum cross sections are evaluated consistently for isotopic lines
 - Covariances across energy domains must be evaluated for the assembled files
 - At CEA, independent sections of files will not be directly adopted but re-done internally using all the good ideas (see previous slides) implemented into our codes and methodologies.
 - Focus on continuity and consistency between energy domains (RRR, URR, continuum).
 - Final integrated product will be submitted to the JEFF library.
 - Constrained and validated by CEA benchmarks and feedback from the nuclear industry.

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