Status of ENSDF Codes

- From NSDD-2013 and USNDP meetings:
  - ENSDF analysis codes have not been updated in nearly 10 years
  - required improvements range from physics models updates and asymmetric error treatment to bug fixes
  - a group effort is required to implement these improvements

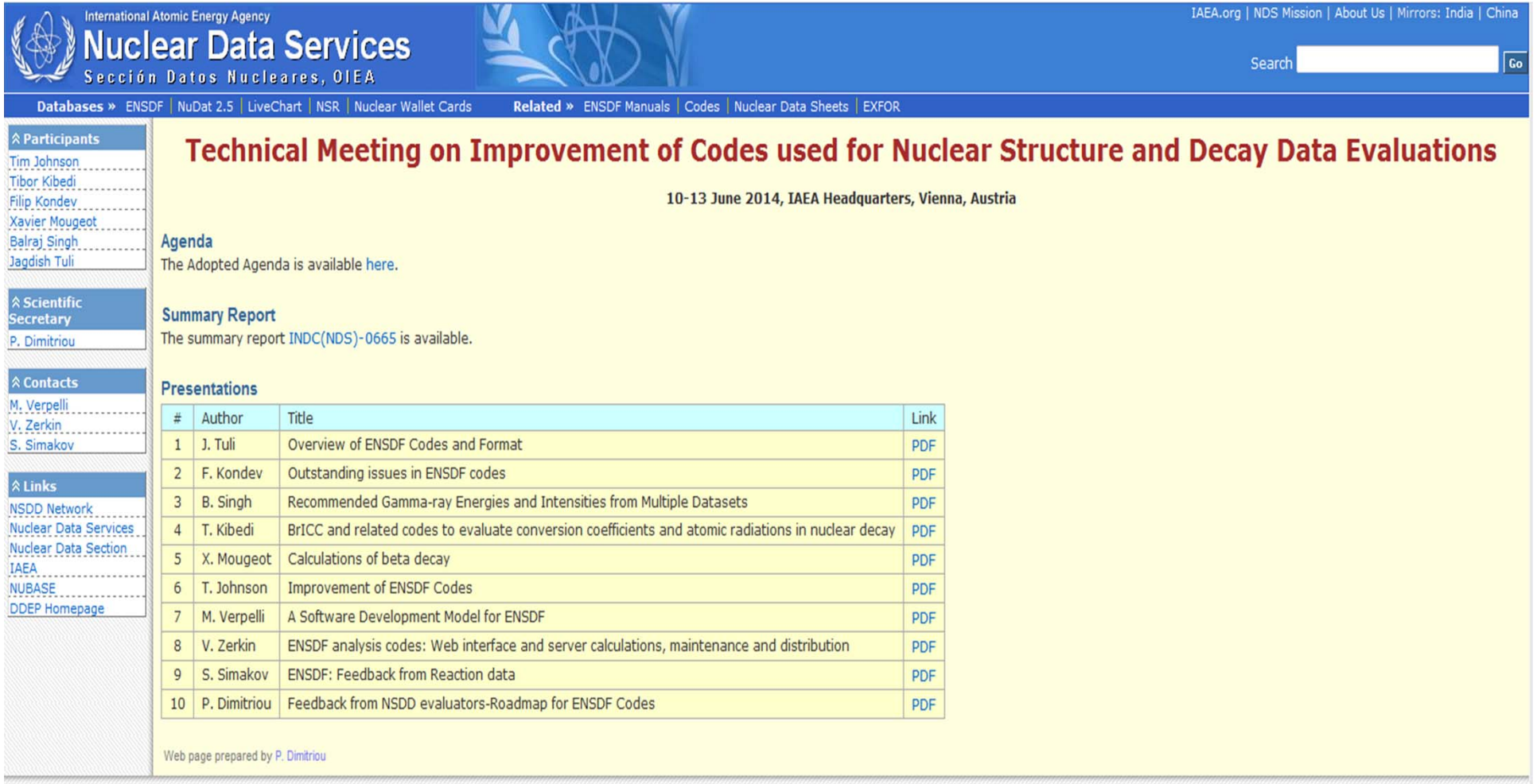
Data Development Project: Improvement of Analysis Codes for NSDD Evaluations

- 1st meeting: 10-13 June 2014, IAEA, Vienna
- Participants: Tuli, Johnson, BNL; Kondev, ANL; Singh, McMaster Univ.; Mougeot, LNHB-Saclay; Kibedi, ANU; Verpelli, Zerkin, Dimitriou, NDS –IAEA
- Summary Report: INDC(NDS)-0665

Objectives of the project

- Update codes (physics models, statistical analysis, treatment of uncertainties)
- Re-write codes in modern programming language
- Improve documentation/manuals-make them comprehensive incl. test cases
- Develop Evaluation Toolkit (based on EVP editor)

NDS Webpage http://www-nds.iaea.org/: Meetings



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Links
NSDD Network
Nuclear Data Services
Nuclear Data Section
IAEA
NUBASE
DDEP Homepage

Technical Meeting on Improvement of Codes used for Nuclear Structure and Decay Data Evaluations

10-13 June 2014, IAEA Headquarters, Vienna, Austria

Agenda

The Adopted Agenda is available here.

Summary Report

The summary report INDC(NDS)-0665 is available.

Presentations

#	Author	Title	Link
1	J. Tuli	Overview of ENSDF Codes and Format	PDF
2	F. Kondev	Outstanding issues in ENSDF codes	PDF
3	B. Singh	Recommended Gamma-ray Energies and Intensities from Multiple Datasets	PDF
4	T. Kibedi	BrICC and related codes to evaluate conversion coefficients and atomic radiations in nuclear decay	PDF
5	X. Mougeot	Calculations of beta decay	PDF
6	T. Johnson	Improvement of ENSDF Codes	PDF
7	M. Verpelli	A Software Development Model for ENSDF	PDF
8	V. Zerkin	ENSDF analysis codes: Web interface and server calculations, maintenance and distribution	PDF
9	S. Simakov	ENSDF: Feedback from Reaction data	PDF
10	P. Dimitriou	Feedback from NSDD evaluators-Roadmap for ENSDF Codes	PDF

Web page prepared by P. Dimitriou

Contribution/feedback from: Libby McCutchan, Ninel Nica, Alexandru Negret, Sukhjeet Singh, Huo Junde

Goals of 1st meeting:

- Review current status of codes
- Assess needs for updating/re-writing codes
- Assess needs for writing new codes
- Produce list of priorities
- Assign tasks

2nd meeting: 5-8 October 2015, IAEA, Vienna

- Monitor progress
- Validation of new codes
- Revise tasks and priorities
- Assign new tasks

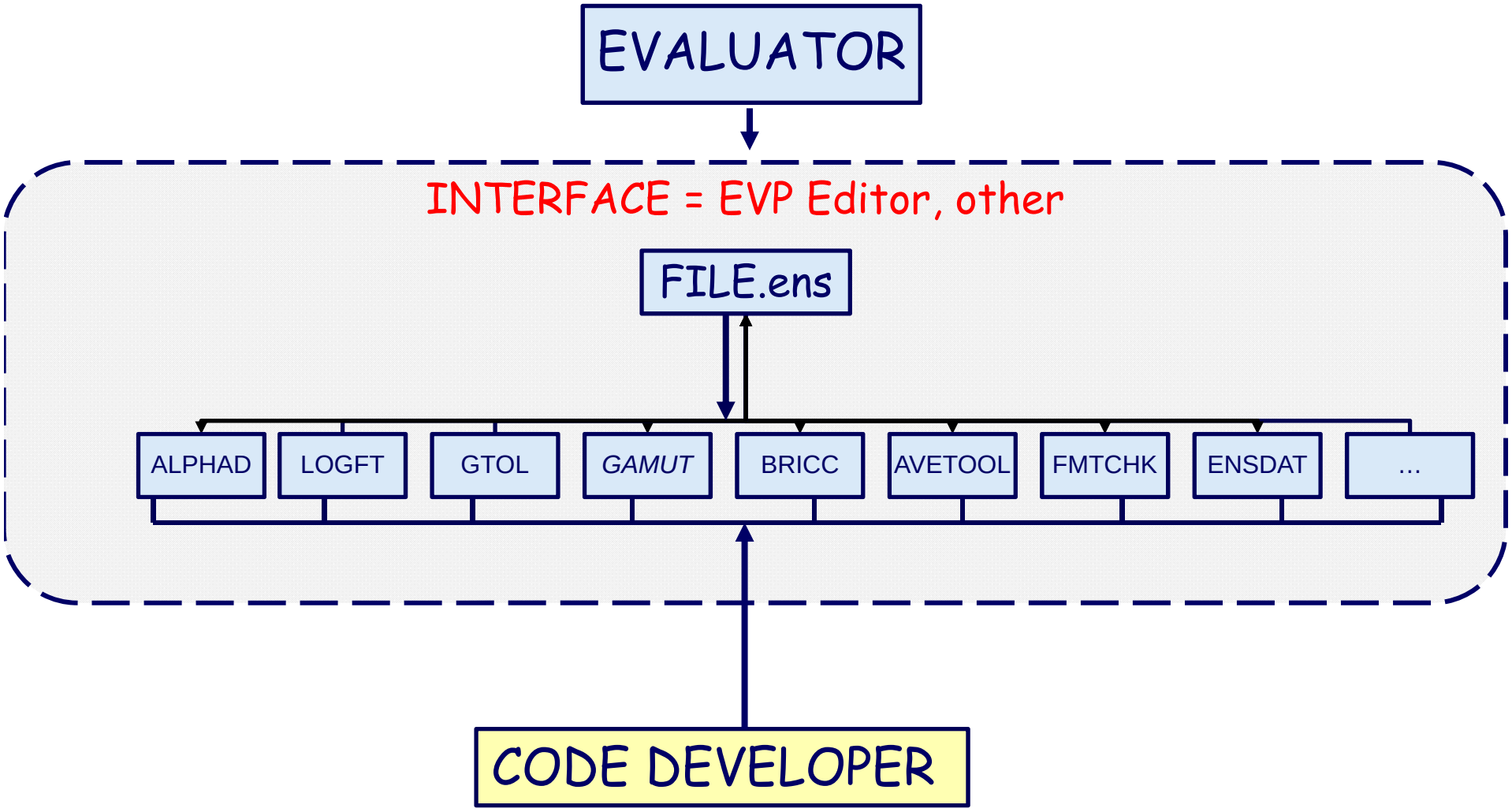
List of assignments

CODES	PRIORITY	WORK	RESPONSIBLE	TIMELINE
WEBTREND/ENSDAT (EMPHASIS ON WEB RETRIEVAL)	1	REPLACE BY JAVA SOFTWARE DEVELOPED BY MCMASTER UNIV. AFTER FURTHER DEVELOPMENT	T. JOHNSON, B. SINGH	**4 MONTHS** ?
RULER	1	ADOPT AGREED POLICIES ON TREATMENT OF LIMITS, INTRODUCE PROPAGATION OF ASYMMETRIC UNCERTAINTIES	T. KIBÉDI, F. KONDEV	**1ST REPORT AT USNDP 2014**, FINAL REPORT AT NSDD 2015 ✓
GAMUT	1	NEW CODE TO DETERMINE GAMMA-RAY ENERGIES AND INTENSITIES FROM MULTIPLE DATASETS	M. BIRCH, R. FIRESTONE, B. SINGH	**1ST REPORT USNDP**, PROGRESS AT NSDD 2015, BETA VERSION AUGUST 2015 ✓
EVALUATION TOOLKIT (EDITOR+CODES)	1	GRAPHICAL EDITOR INTEGRATING ANALYSIS AND CHECKING CODES (EVP Editor)	COORDINATED BY NDS IAEA: INVOLVE A. SONZOGNI	**REPORT AT USNDP 2014**, NSDD 2015
XLS2ENS, TXT2ENS	1	CONVERSION OF PUBLISHED TABLES TO ENSDF DATA SETS	F. KONDEV, J. CHEN, B. SINGH	**USNDP 2014** ✓

ALPHAD		LIMIT UNCERTAINTY TO ONE DIGIT	T. JOHNSON	
NEW R0 INTERPOLATION CODE	2	INTERPOLATION FOR R0 VALUES	S. SINGH, B.SINGH	**USNDP 2014** NSDD 2015 ✓
NEW R0 TABLES		UPDATE R0 TABLES FOR NEW Q-VALUES, BRANCHINGS AND NUCLIDES	B. SINGH, S. SINGH	**In Progress**
VISUAL AVERAGING LIBRARY	2	PROVIDE VERSION FOR LINUX AND MAC OS	M. BIRCH, B. SINGH	NSDD 2015 ✓
NEW GABS	2	TO PROVIDE ABSOLUTE INTENSITIES FOR DECAY DATA SETS	F. KONDEV, T. KIBÉDI, E. BROWNE	PROGRESS REPORT AT NSDD 2015 ✓
LOGFT	2	LIMIT UNCERTAINTY TO ONE DIGIT	J. TULI, B. SINGH	NSDD 2015
NEW LOGFT/BETA SPECTRA SHAPE CODE	2	USE CEA-SACLAY APPROACH FOR SHAPE FACTORS	X. MOUGEOT, NDS IAEA	REPORT AT NSDD 2015 ✓

ALL ENSDF CODES	1	ASSESS EFFORT AND FTE REQUIRED TO RE-STRUCTURE CODES SEPARATING INPUT/OUTPUT FUNCTIONS IN INDEPENDENT MODULES	NDS IAEA, NNDC	REPORT AT NSDD 2015
RADLIST	2	REPLACE RADLIST BY BRICCEMIS-ATOMIC AND DECAY DATA CODE	T. KIBEDI	PROGRESS REPORT AT NSDD 2015 ✓
PANDORA	2	ENHANCE CODE	J. TULI, E. MCCUTCHAN, B. SINGH	NSDD 2015
CHECKING CODES (FMTCHK)	2	ENHANCE FORMAT CHECKING AND PHYSICS CHECKING CAPABILITIES	INVOLVE PNPI GROUP	REPORT AT NSDD 2015
ONLINE WEBTOOL	2	MAKE NEW CODES AVAILABLE **(CHK_ENSDF already available)**	V. ZERKIN	NSDD 2015 ✓

Evaluation Toolkit



Advantages of Evaluation Toolkit (EVP Editor)

- SIMPLE I/O INTERFACE for Evaluator: no worry about ENSDF format
- INTEGRATE ANALYSIS AND CHECKING CODES: no worry about installing/compiling/debugging individual codes
- UPDATED DISSEMINATION OF WHOLE PACKAGE NOT INDIVIDUAL CODES: no worry about tracking updates of individual codes
- PLATFORM INDEPENDENT (FOR ALL OS)

Start with EVP Editor (in collaboration with Alejandro Sonzogni)

IAEA-NDS Contribution

- An INTERN will be hired to work with A. Sonzogni and NDS staff on
  - updating/extending the EVP editor AND
  - checking all other ENSDF codes that are not already assigned
- INTERN: young graduate student or post-doc willing to work at IAEA for a period up to 1 year
- IAEA staff involved: P. Dimitriou, M.Verpelli

Development/Dissemination

- Codes will be uploaded on GFORGE (NNDC-BNL) for code developers
- Will become available on MyENSDF Web Tool
- Dissemination will be done from NNDC and IAEA web pages with notification

Dissemination

ENSDF Analysis and Utility Programs

The Brookhaven National Nuclear Data Center maintains and distributes various programs in support of the International Atomic Energy Agency sponsored Nuclear Structure and Decay Data Network. These programs generally use as input files in the Evaluated Nuclear Structure Data File (ENSDF) format.[1]
For further information about the status and revision history please visit the **NNDC dedicated web pages.**
List of modifications:

- 2015-04-02 **GABS new version**
  In some cases the uncertainty of the normalised gamma intensity was incorrectly reported in the output ENSDF file: '**' was given instead of a numerical value.
  Warning is given if no gamma transition is marked to be used for normalisation by inserting 'X' or 'Y' in column 79.
  Old comment gamma records with the calculated normalised intensities are removed/replaced with new ones.
- 2015-03-10 **RadD program added** - Deduces radius parameters

Please address any issue regarding this page to nds.contact-point@iaea.org Last updating: 2 Apr 2015.

Analysis | Utility | NSDFLIB | SETMDC

ENSDF Analysis Programs
When present, documentation is included in the compressed files

#	Program	Last Changed	ANSI	Linux	Windows	MacOS
1	**ALPHAD** Calculates alpha HF's and theoretical half-lives.	2014-10-15 Added MacOS files	Source code Compressed file	Source code Executable Compressed file	Source code Executable Compressed file	Compressed file with other codes*
2	**BrIcc** Calculates the conversion electron, electron-positron pair conversion coeffcients and the E0 electronic factors	2015-01-20 New Windows executables correcting runtime problems		Compressed file	Self-extracting archive	Compressed file
3	**BrIccMixing** Calculates the multipole mixing ratio - Requires BrIcc	2015-01-20 New Windows executables correcting runtime problems		Compressed file	Self-extracting archive	Compressed file
8	**LOGFT** Calculates log ft values for beta and electron-capture decay, average beta energies, and capture fractions	2014-10-15 Added MacOS files	Source code Compressed file	Source code Executable Compressed file	Source code Executable Compressed file	Compressed file with other codes*
9	**PANDORA** APerforms a least-squares fit to the gamma-energies to obtain level energies and calculates the net feedings to levels.	2014-10-15 Added MacOS files	Source code Compressed file	Source code Executable Compressed file	Source code Executable Compressed file	Compressed file with other codes*
10	***NEW*** **RadD** Deduces the radius parameter for odd-odd and odd-A nuclei using the even-even radii as input parameters	2015-03-10 Added to the list	Source code	Compressed file With source and exec for all platforms. For Linux and MAC OS exec compiled with gfortran.	Compressed file With source and exec for all platforms.	Compressed file With source and exec for all platforms. For Linux and MAC OS exec compiled with gfortran.

Dedicated Web page for Codes project under construction