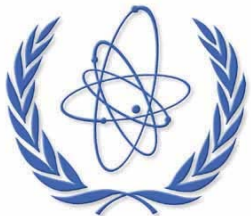# Programming the IAEA Databases

ADAS Meeting

Abingdon, England

11-13 November 2006

D. Humbert, R.E.H. Clark, K. Sheikh

Atomic and Molecular Data Unit
http://www-amdis.iaea.org

- Objective: establishment of recommended numerical databases for use in fusion energy research

- WWW, main support to provide the information
  - AMBDAS, a bibliographic database
  - ALADDIN, a numerical database
  - GENIE, a web search engine
  - Web calculation tools

Databases and GENIE

ALADDIN, numerical database
- Atomic and molecular collisions (8000 data)
- Particle surface interactions (1500 data)

http://www-amdis.iaea.org/ALADDIN

AMBDAS, bibliographic database
- Domain covered: information of interest for fusion energy research
- 120,000 data for 45,000 references

http://www-amdis.iaea.org/AMBDAS

GENIE, web search engine
- 8 spectroscopic databases
- 3 collisional databases

http://www-amdis.iaea.org/GENIE

Web calculation tools

IAEA

- Cross sections of bare nuclei on hydrogenic ions:

  http://www-amdis.iaea.org/HEAVY/

- Average approximation for electron impact excitation of atomic ions:

  http://www-amdis.iaea.org/AAEXCITE

- Results from collisional radiative calculations of plasmas are available, as carried out with the Los Alamos modeling codes:

  http://www-amdis.iaea.org/RATES/

LANL

- Los Alamos atomic physics codes: an interface is available to run several Los Alamos atomic physics codes to calculate atomic structure and electron impact excitation, as well as ionization processes

  http://aphysics2.lanl.gov/tempweb/lanl/

New ALADDIN

No hierarchy level in the request

User friendly driven request → filtering, help dialog boxes

Unit Conversion

New criteria: category and process category

New data structure → review of data (authors, units)

http://www-amdis.iaea.org

ALADDIN

Atomic and Molecular Data

Surface Interactions

___ Process selection ___
Ionisation, excitation, dissociation…

___ Finer selection ___
Reactants, accuracy, date, publication…

Filtering
Number of related data

Data output selection

Units selection

Numerical data and graphs

Units conversion