1. The ADAS Project

An Integrated Approach to Modelling Radiating Properties of Plasmas

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Fusion plasma

- Radiating regions
  - » Bulk plasma
  - » Edge divertor plasma
  - » Beam penetrated plasma
- Special interest
  - » Spectral emission from divertor plasma
  - » Emission associated with beams

Astrophysical plasma

- Radiating regions
  - » solar corona & chromosphere
  - » diffuse and planetary nebulae
  - » Accretion plasmas, cooling flows
- Special interest
  - » SOHO-CDS & SOHO-SUMER spectra
  - » XMM & AXAF

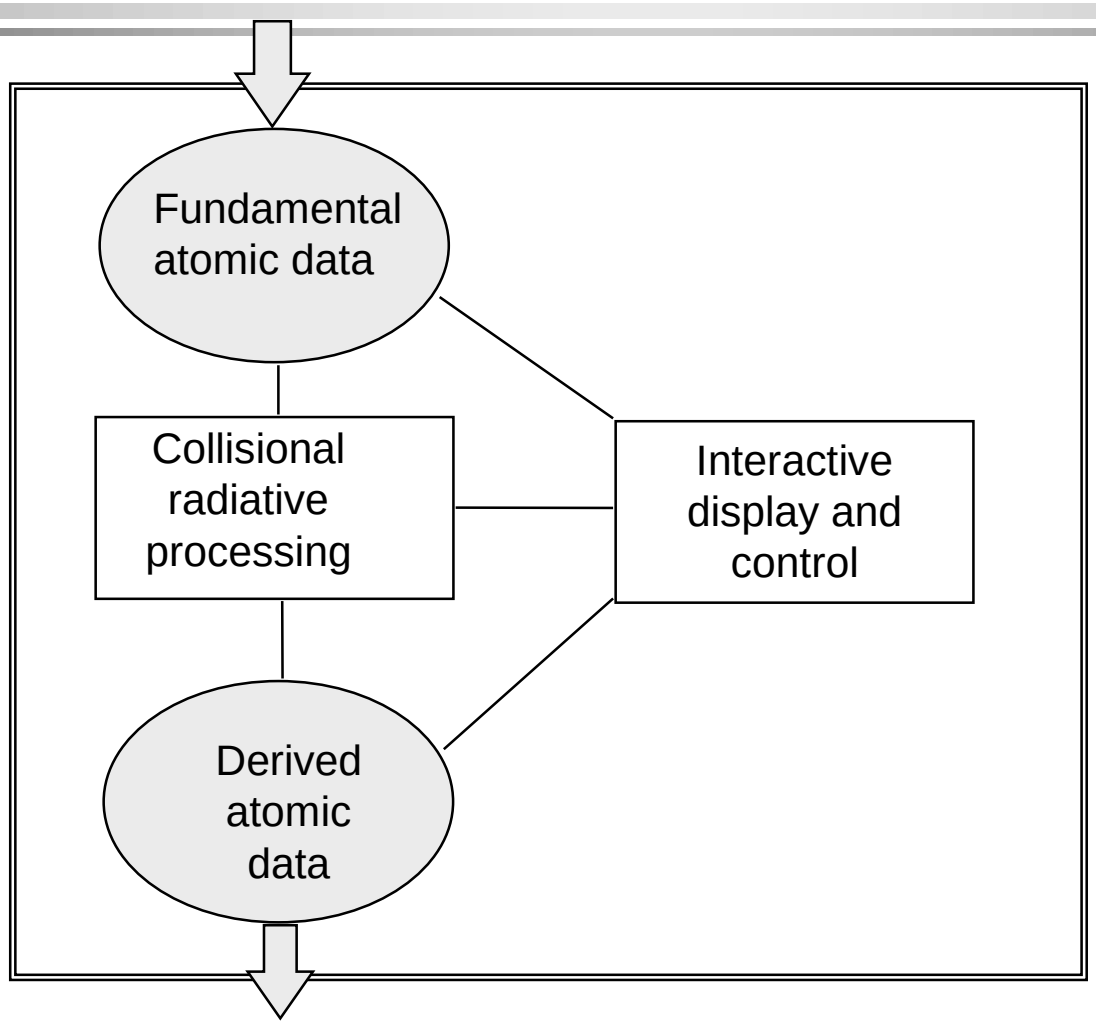
Collisional radiative modelling

- Fundamental and derived atomic data
  - » Finite density plasma
- Atomic time constants
  - » Dynamic and quasi-static separation
- Local and non-local properties
  - » Features and superfeatures

Objectives of integrated atomic modelling

- Separating the local atomic tasks
- Provision of derived data close-linked to experimental data reduction
- Provision of consistent source function inputs to theoretical plasma modelling
- Central management of atomic data

The atomic modelling



models and experiment analysis

JET and ADAS

- The commitment to atomic physics at JET.
- Theoretical atomic physics based in the experimental spectroscopy division
- Data centralisation for modelling and analysis
- Responsibility to EURATOM partners
- Access to JET atomic data

ADAS

- The interactive user interface
  - » ADAS series
- The fundamental and derived databases
  - » ADAS data formats
- The application interface
  - » ADAS subroutine libraries

ADAS series

- Atomic data entry and verification
- Population processing
- Charge exchange processing
- Recombination and ionisation processing
- Supplementary programs
- Applications programs

ADAS series 2

ADAS201	Specific z excitation	graph and fit coefficient
ADAS202	General z recom/ionis	extraction from general z file
ADAS203	General z excitation	extraction from general z file
ADAS204	Specific z recom/ionis	process coll-rad coefficients and populations
ADAS205	Specific z excitation	process metastable and excited state populations
ADAS206	Specific z excitation	Process total and specific line power
ADAS207	Metastable and excited populations	process line emissivities
ADAS208	Specific z excitation	advanced population processing

Fundamental data support

Area	Collaborators	Location	Sponsor
e^- excitation xects. mass prod./med. quality high precision/targetted	Sampson & Zhang Burke, Berrington et al.	Penn State, USA Queen's, Belfast	JET JET
Dielectronic recomb. high precision/general	Badnell	Strathclyde, Scotland	
e^- ionisation xsects. high precision/general	Griffin, Pindzola, Badnell	Rollins, USA; Auburn, USA; Strathclyde	Ionisation project
Charge exchange - exp. targetted	Hoekstra	FOM-KVI, Netherlands	Euratom/JET article 14
Charge exchange - theor. targetted targetted	Fritsch Olson	HMI, Berlin USA	JET
Radiated power	IAEA	Vienna	CRP-radiative cooling for ITER
Data review & prepar. Various	Lang, Mason	Rutherford/Appleton, UK	SOHO-CDS satellite

The ADAS Project

- Self funded project to convert JET-ADAS to IDL-ADAS for unix workstations
- Information on world-wide-web (http://patiala.phys.strath.ac.uk/adas/)

Participant organisation	Contact
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The ADAS Project (contd.)

- Obligations to JET
- The role of Rutherford-Appleton Laboratory
- Responsibilities in the collaboration

The ADAS Project (contd.)

- The present status
- The solar astrophysics and fusion dimensions
- Forward commitments
  - » Post doctoral activities for ADAS
  - » ADAS workshops
  - » Support & tutorial visits