1a. An overview of the ADAS Project

- A little history

- An integrated approach to modelling radiating properties of plasmas

- The Atomic Data and Analysis Structure

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

The establishment of the ADAS Project

- Theoretical atomic physics support commenced at JET   - 1984
- Centralised atomic data and coding under EDII, JET   - 1985
- First IBM/TSO interactive ADAS release   - 1989
- UNIX conversion preparatory study   - 1993
- Start of ADAS project managed by Strathclyde University   - 1993
- ADAS UNIX/IDL conversion   - 1993/95
- 1st ADAS annual Workshop   - 1995
- Start of ADAS project on going maintenance   - 1996
- First non-voting university members (TUV)   - 1997

The ADAS Project

● Project, self-funded by participants

Participant organisation	Contact
JET Facility/UKAEA Culham Laboratory	K-D Zastrow
IPP-Garching, Germany	K. H. Behringer
KFA-Juelich, Germany	P. Mertens
Oak Ridge-Atom. Data Centre, USA	D. Schultz
Rutherford-Appleton Laboratory, UK	J. Lang
RFX Padua, Italy	M. Valisa
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University of Toronto, Canada	P. Stangeby
Fraunhofer Institute for Laser Technik/Philips Research Labs, Aachen	T. Kruechen
Auburn University, USA	M. Pindzola
IPR, Gadhinagar, India	P. Vasu
SWIP, Chengdu, China	X. Duan
Birla Institute, Jaipur, India	R. Prakash
FOM Rijnhuizen, Netherlands	M. von Hellermann
Armagh Observatory, Armagh, Northern Ireland	G. Doyle
Kurchatov Institute, Moscow, Russia	A. Tugarinnov
Princeton University	D. McCune
ITER	R. Pitts
IAEA, Vienna, Austria (in process)	R. Clark/B. Braams
University of Strathclyde	H. P. Summers

ADAS-EU

- European Framework 7: support action – provided by the University of Strathclyde.

- Commenced 1 Jan 2009 for four years.

- Provide atomic physics support for fusion associated laboratories throughout Europe.

- Main themes: heavy species, charge exchange spectroscopy, beam emission spectroscopy, hydrogen molecules, special features

- On-site ADAS-EU staff at selected main European laboratories.

- Sponsorship of an annual ADAS training course.

Targets of ADAS

- Fusion Plasma
  - » Bulk plasma
  - » Edge divertor plasma
  - » Beam penetrated plasma

- Astrophysical Plasma
  - » Spectral emission from the solar atmosphere
  - » X-ray emission from cometary and planetary atmospheres
  - » VUV, XUV and X-ray line emission from gas clouds and other hot cosmic sources
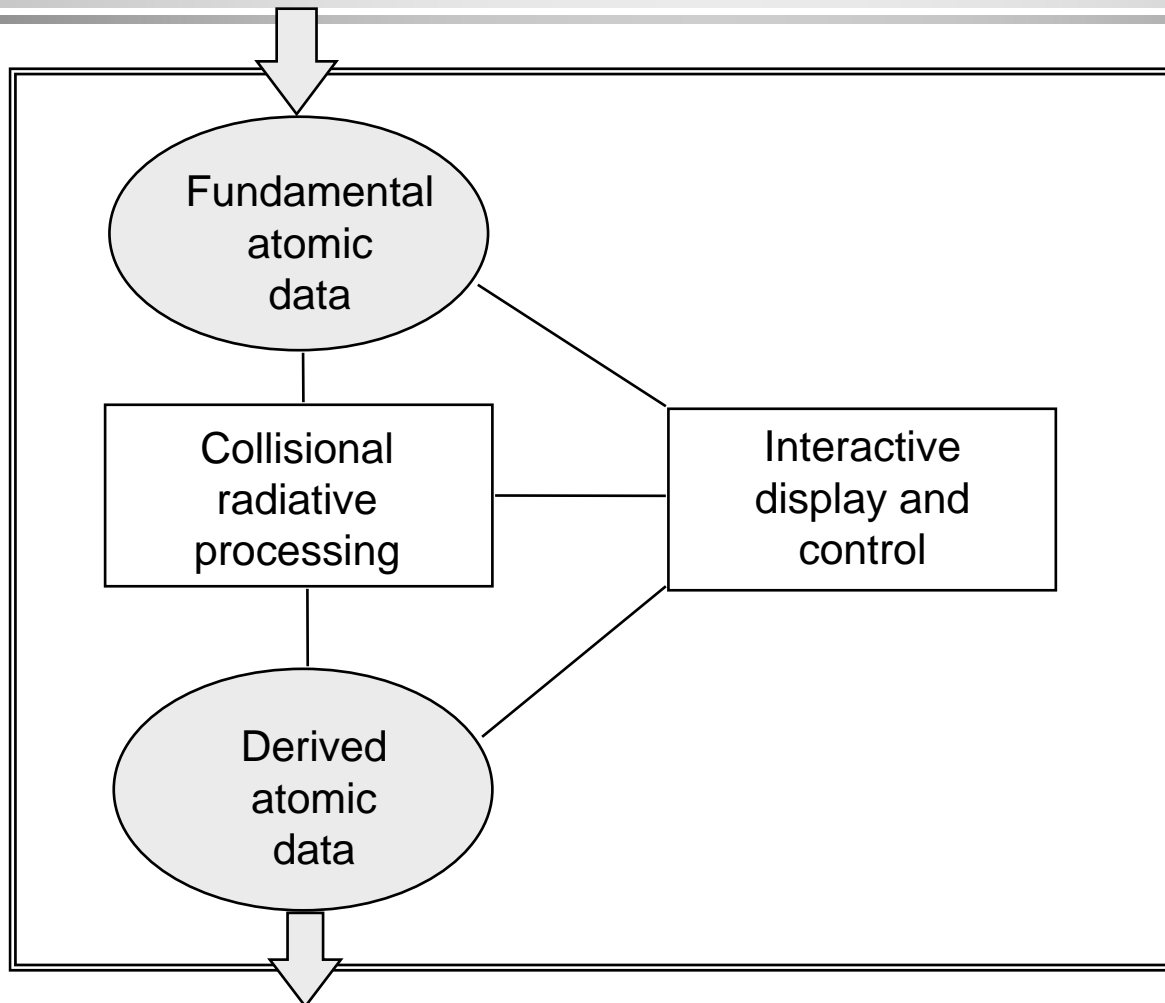
Objectives of integrated atomic modelling

- Separating the local atomic tasks

- Provision of derived data close-linked to experimental spectroscopic data reduction

- Provision of consistent source function inputs to theoretical plasma modelling

- Central management of atomic data

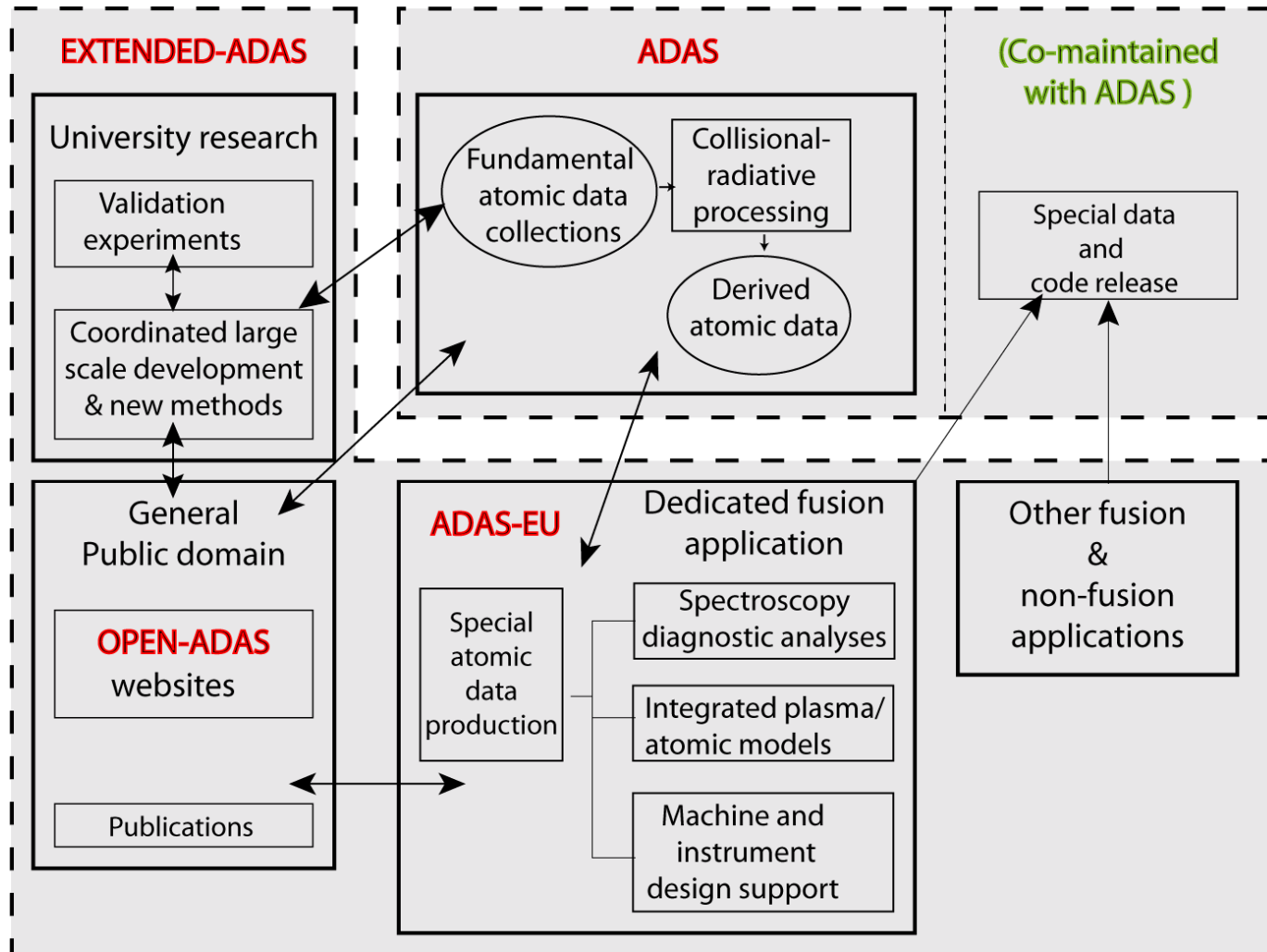# Collisional radiative modelling

- Fundamental and derived atomic data
  - » Finite density plasma

- Atomic time constants
  - » Dynamic and quasi-static separation

- Local and non-local properties
  - » Features and superfeatures

- ADAS uses generalised collisional-radiative modelling

ADAS modelling schematic

models and experiment analysis

The ADAS family and relationships

ADAS

- The interactive user interface
  - » ADAS series

- The fundamental and derived databases
  - » ADAS data formats

- The application interface
  - » ADAS Fortran and IDL subroutine libraries

- Offline-ADAS

- Documentation

ADAS main menu