

“Classical” turbulence in
Cryogenic He-I

Quantum turbulence in
Superfluid He(‘s)

**March 2008: submission of a IA proposal
Within the FP7 Capacities Programme:**

- NETWORKING**
- Management
 - Open problems in physics of turbulence
 - Dissemination
 - Meetings/Workshops/Conferences
- JRA**
- Measurement techniques
 - “General background” work packages
 - Improvement of existing facilities
 - Prototyping of enhanced experimental facilities
- ACCESS**
- Direct access to facilities
 - Exchange of data/results
 - Execution of experiments on specification

“Users”

- Geophysics
- Climatology
- Oceanography
- Combustion
- Particle dispersion / sedimentation

...

CFD communities

“Reference experiments”

- Ilmenau Barrel
- MPG Goettingen Tunnel
- Cyclope
- ... ?

**April 2010: submission of a Design Study for a new large scale experimental
facility in cryogenic He, hosted at CERN and commonly shared**

Possible JRA's on "MEASUREMENT TECHNIQUES IN CRYOGENIC HE"

- **Hot wire / Hot film anemometry; Cold wire thermometry**
 - Technical development
 - Reproducibility and reliability enhancement
 - Wire size reduction to nm level
- **LDV / PIV; Ultrafast tracking of lagrangian tracers**
 - Choice of best seeding
 - Theoretical understanding of seeding particle behaviour
- **Pressure / Temperature devices; Cantilevered fibres**
 - Better technological development
- **Second sound attenuation; Acoustic scattering; Acoustic detectors**
 - Reduce the size of space averaging
- **Vibrating Forks ("Skrbek')**
 - Better modelling of the device
 - Technical development
- **SQUIDS**
 - Electronics development
- **Ions shooting**
 - General development of the technique
- **NEW TECHNIQUES**
 - Laser Induced Fluorescence in He
 - Optical Fibre Sensors
 - Levitation objects

Possible JRA's on "General Background W.P."

- Handling / Storage / Availability of large packages of data (GRID?)
- Data processing techniques
- Signal processing techniques (e.g. de-noising...)
- Core electronics development (miniaturization, cryogenic compatibility...)