

# *Project-team Proposed Instruments, design-team organization, Strategy*

M. Arai KEK/JAERI

1. Conceptual Design of Day-one Instruments
2. Evaluate requirements for
  - Moderators (Decoupling energy 1eV, poisoning depth)
  - Utilities & Facility
  - Instrument components (Detector, Mirror etc.)
3. Instruments arrangements to evaluate required beam ports (number and separation) and requirement on engineering design of target station including moderator structure etc.

## *Instruments Conceptual Design Process and Strategy*

1999-2000 Instruments Discussion Group  
(User demands, scientific demands on instruments)  
40 instruments were proposed

2000-2002 Instrument Project Team was established  
(40 personnel, JAERI, KEK and Univ. users)  
Pre-selection of instruments to proceed concrete design of  
Target Station (Beam hole, viewing moderator etc.) by  
taking into account user demands.

Whole Q-E space should be covered by instrument suits  
so that various science can be applied.

**Project-team Proposed 10 day-one instruments**

2002.12 Formal Proposal to Instrument Selection Panel  
(now in preparation)

*Instrument group organization*  
*allied team of KEK, JAERI and Users*

M. Arai + 40 members

Powder Diff. : T. Kamaiyama (KEK)+3

Stress Ana. Diff. A. Moriai (JAERI)+6

Bio-X-tal Diff. T: Ozeki (Tokyo Inst. Tech.), I. Tanaka (JAERI)+3

SAN : J. Suzuki (JAERI)+1

Total Scatt. Inst. T. Otomo (KEK)+5

Refractometer : N. Torikai (KEK)+6

Chopper inst. : S. Itoh (KEK)+9

Bio-molec. Spectr. : K. Shibata (JAERI)+5

Device development group

M. Furusaka + 15

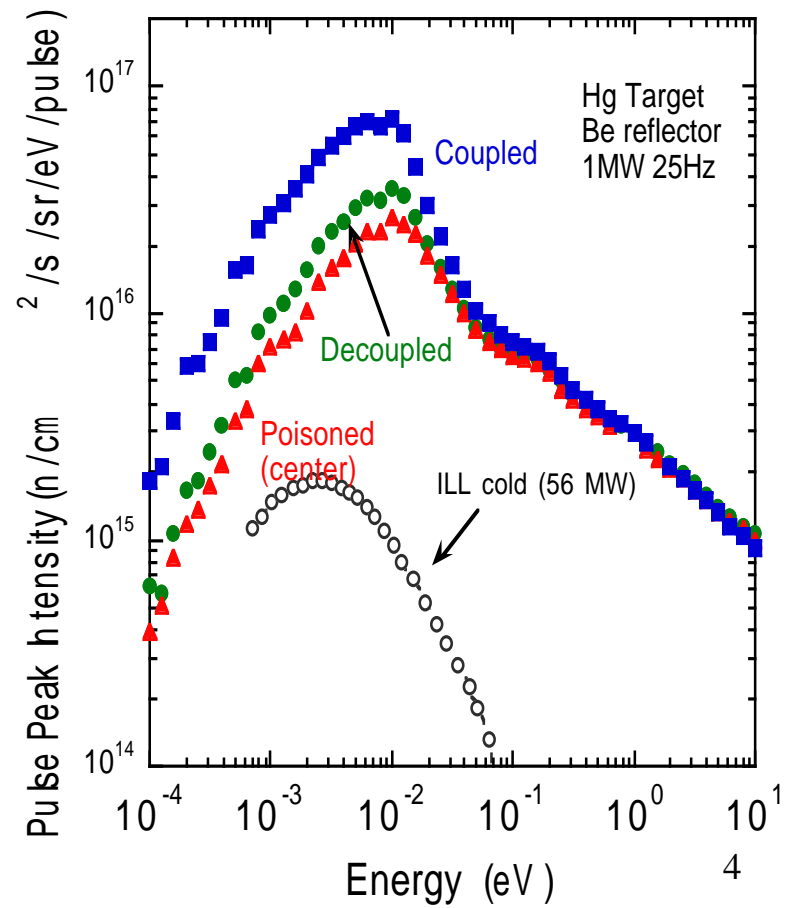
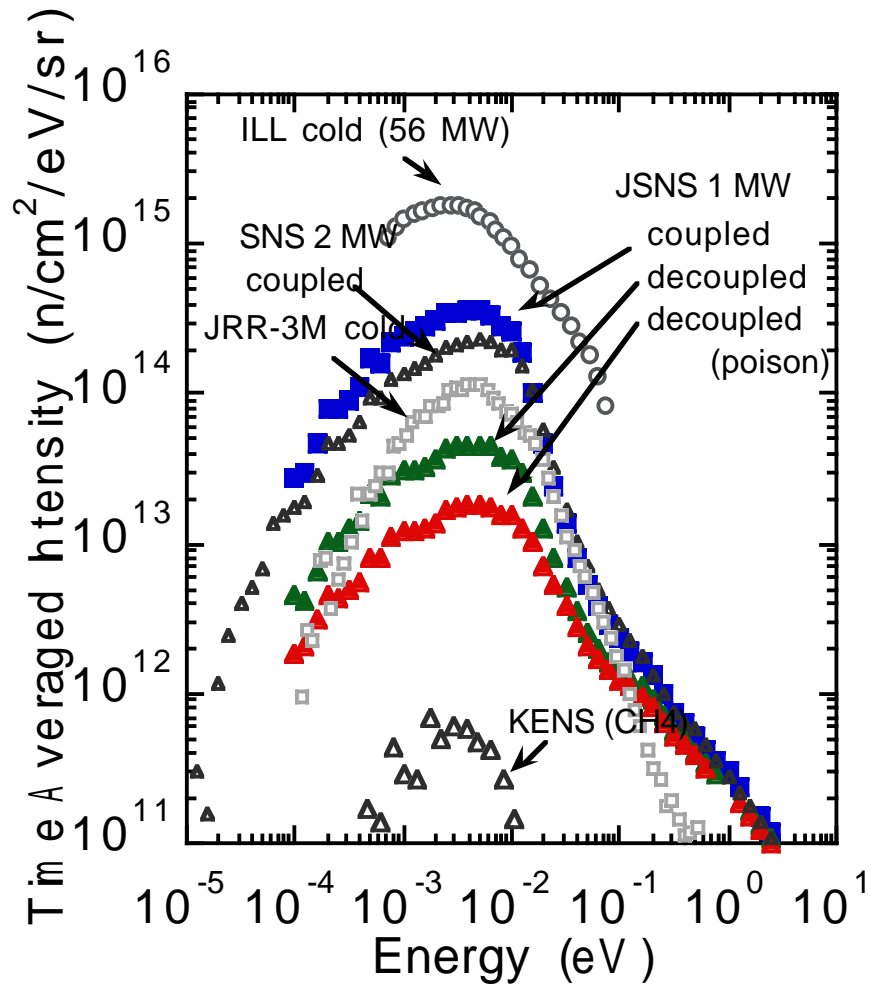
detector, mirror, chopper, etc.

# Unique Neutron Flux of JSNS

Time Averaged Intensity: Coupled Moderator 1/4 of ILL's cold

Pulse Peak Intensity:

100 of ILL's cold



# Uniqueness of JSNS

1MW with 25Hz

--> wide time frame  
(wide dynamical range)

All Cryogenic moderators

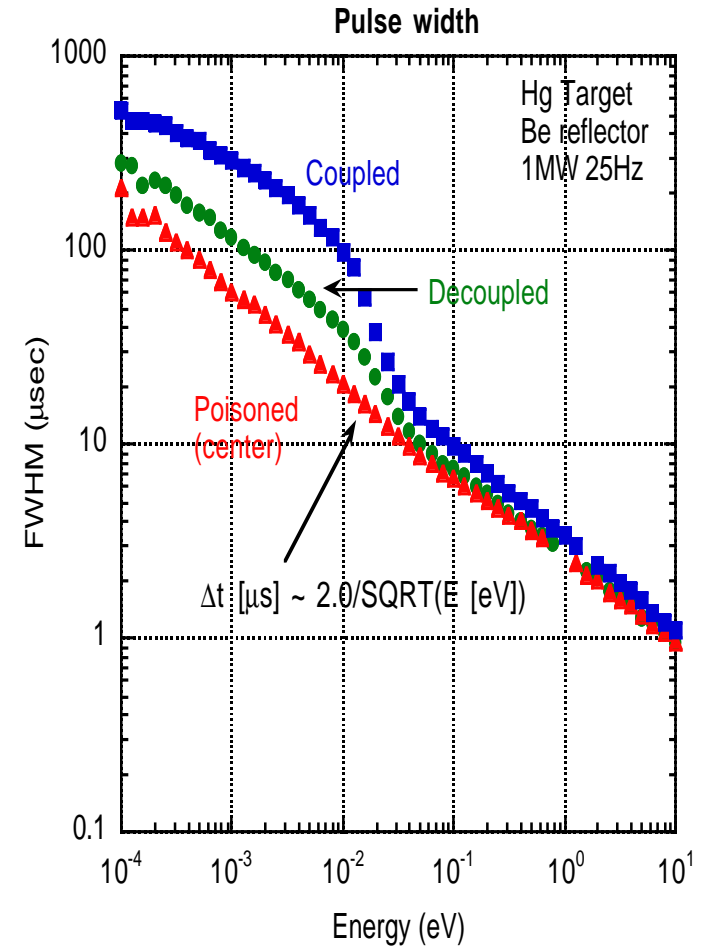
naturally good performance  
at low energy

Good performance on Coupled Mod.

--> guide, pulse shaper  
realizing high intensity and  
resolution at the same time



High performance on Instruments

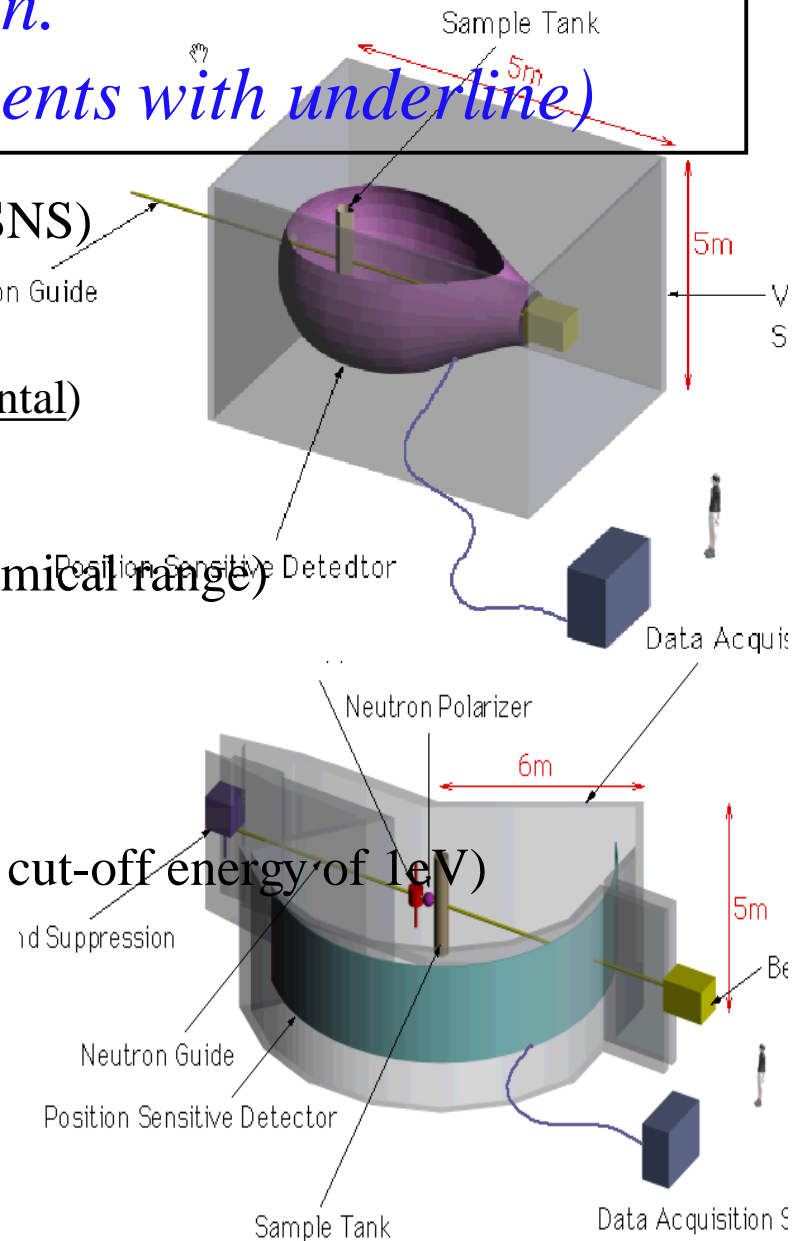


*Pre-selection of 23 instruments according to user's demand to proceed target engineering design.  
(10 project-team proposed instruments with underline)*

- 1) **Coupled Moderator 11 ports** (uniqueness of JSNS)  
Bio-molecular X-tal diff.(high reso., versatile)  
Small angle diff.(high reso., high intensity)  
Double X-tal SAN, Reflectometer (vertical, horizontal)  
Low energy chopper instrument  
 Spin echo instrument, Radiography Inst., Test port

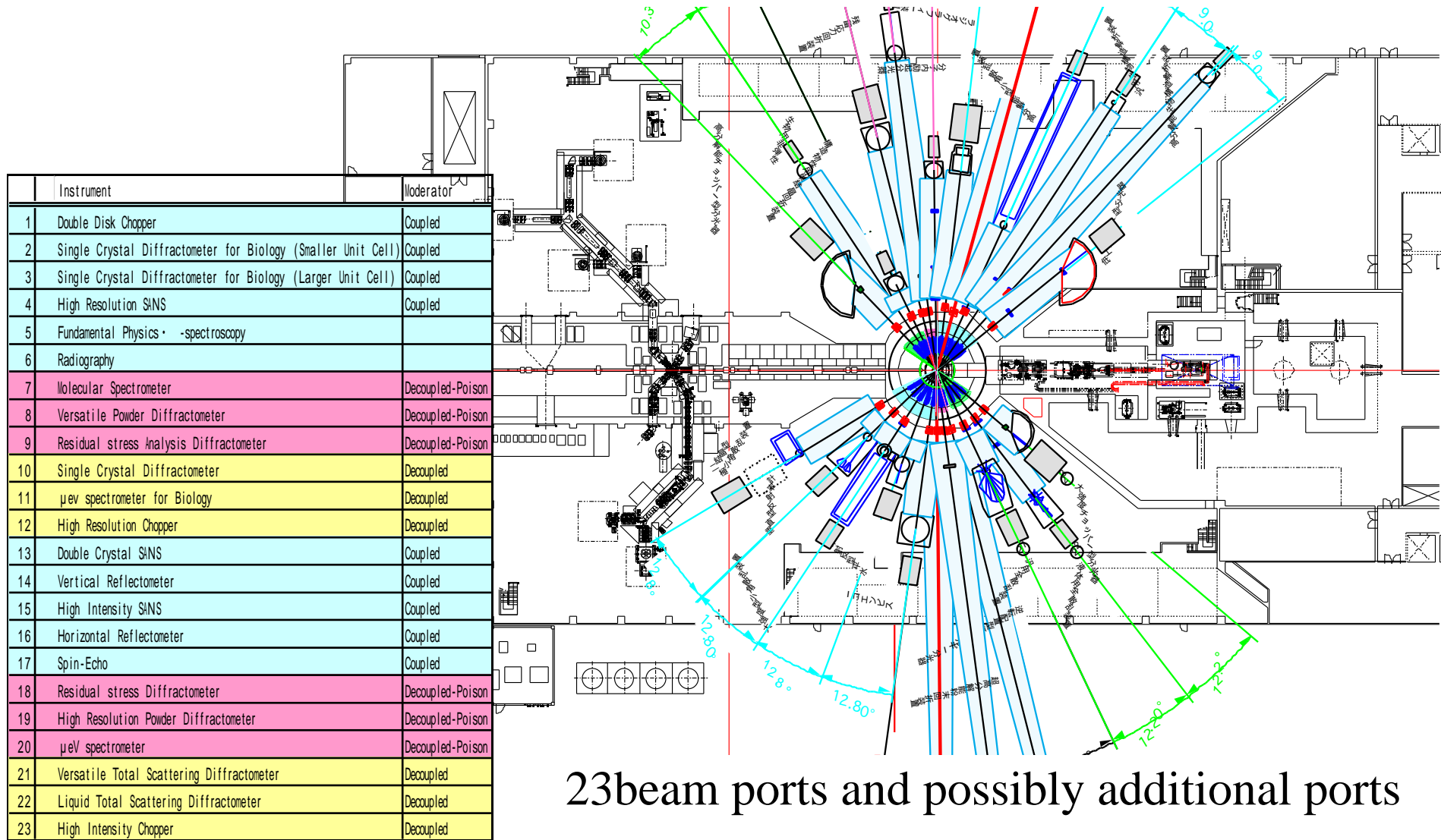
- 2) **Decoupled Moderator 6 ports** (with wide dynamical range)  
Single X-tal diff.  
Total Scattering Inst. ( amorphous, liquid)  
Chopper Inst.( high reso., high intensity)  
Bio-molecular spectrometer

- 3) **Decoupled Poison Moderator 6 ports** (with high cut-off energy of 1eV)  
Powder diffractometers (high resolution, versatile)  
Stress Analysis diffractometer  
Micro eV X-tal analyzer inst  
Molecular spectrometer  
 Test port



# Layout of instrument suits

Equalized port separation for each moderator ports  
wide for Coupled mod., narrow for poisoned mod.



23beam ports and possibly additional ports