

# Physics in Korea

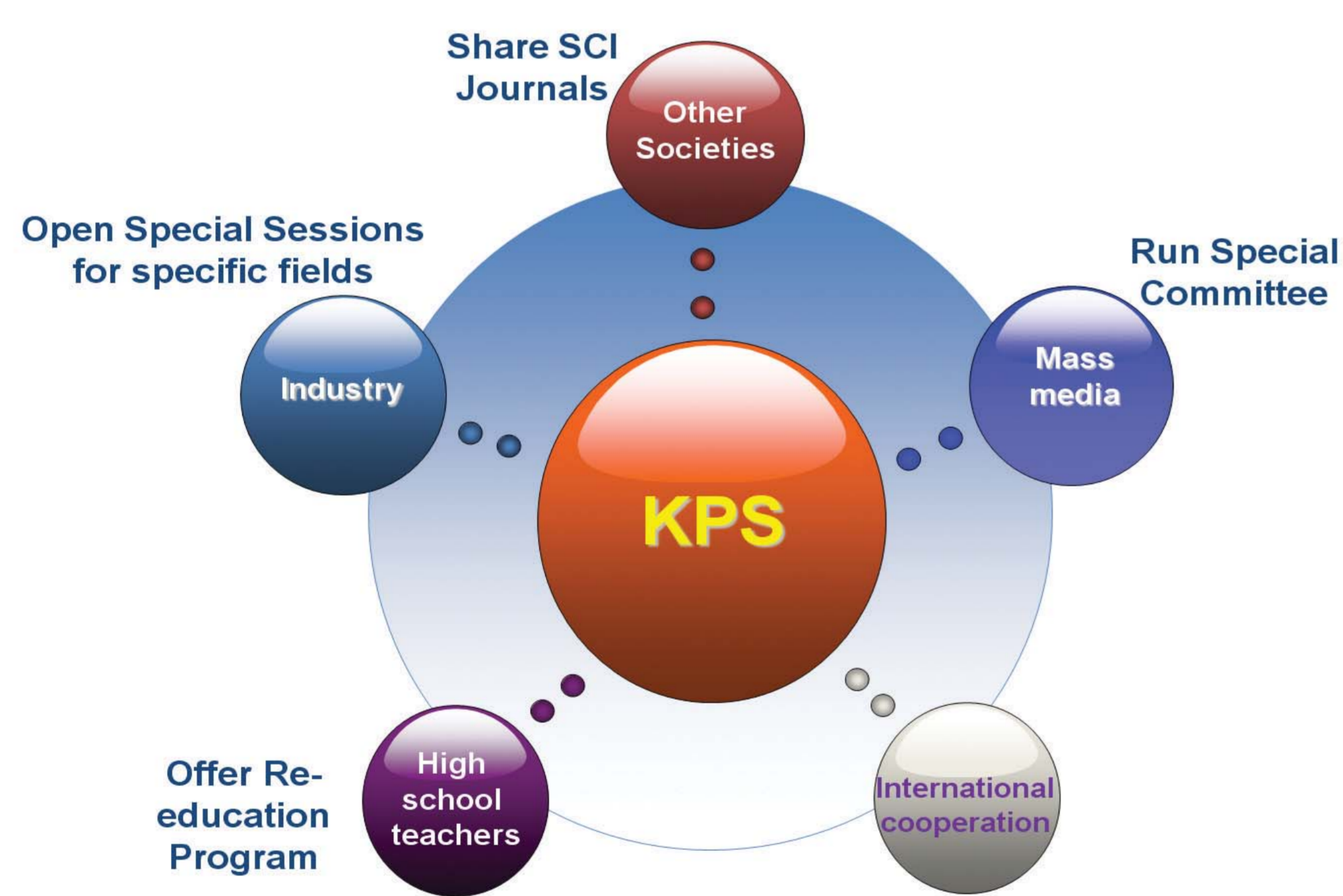
## Overview of the Korean Physical Society

- ❖ Founded in 1952
- ❖ 12,378 members
- ❖ 11 divisions, 7 regional chapters, 17 committees
- ❖ Semiannual meetings
  - April and October
  - Approximately 1,000 papers each time
- ❖ 4 periodicals published
- ❖ Korean Physics Olympiad
  - Competition for middle school & high school students
  - 6,800 participants in 2009

## KPS Journals



## Expanding Frontiers



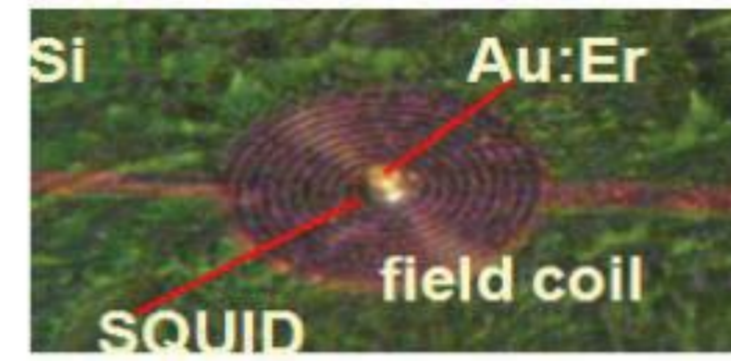
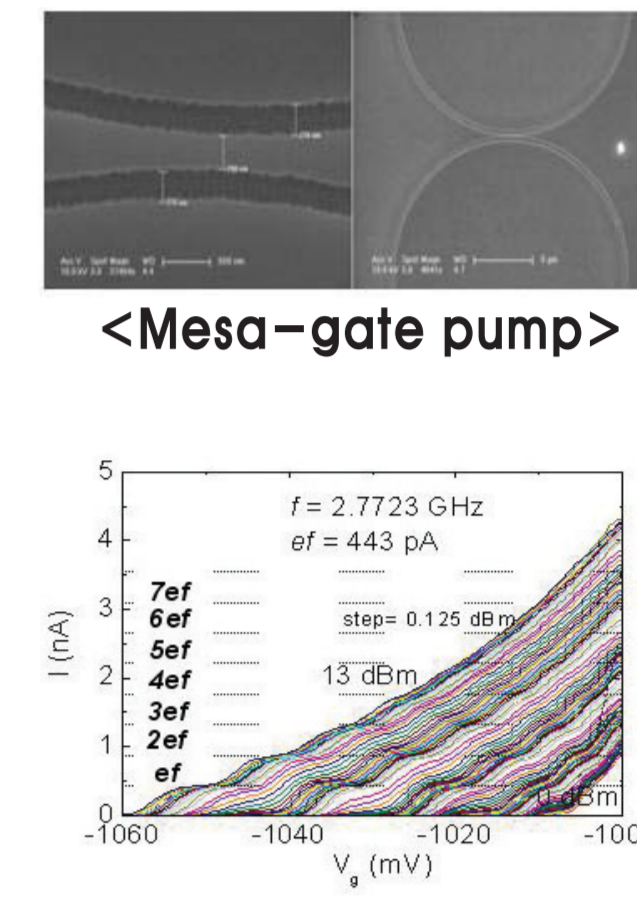
## External Cooperation

- ❖ Alliance with Other Societies in Korea
  - Federation of Basic Science Societies
  - Federation of Physics-Related Societies
- ❖ International Cooperation
  - Physical Society of Japan (1986)
  - Japan Society of Applied Physics (1987)
  - German Physical Society (1991)
  - American Physical Society (1993)
  - Australian Institute of Physics (1994)
  - Chinese Physical Society (1995)
  - Institute of Physics (1997)
  - Association of American Physics Teachers(2001)
  - Indonesian Physical Society(2005)
  - Myanmar Physical Society(2005)
  - Vietnamese Physical Society(2005)

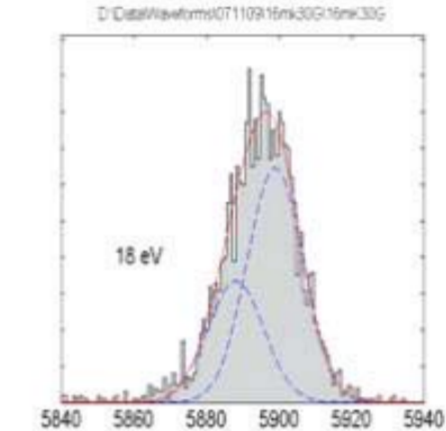
## Physics Research Institutions in Korea

### Korea Research Institute of Standards and Science (KRISS)

- ❖ Established in 1975
- ❖ Mission of KRISS
  - Establishment and Maintenance of National Measurement Standards
  - R&D on Metrology
  - Dissemination of NMS
- ❖ Next generation measurement standards
  - Quantum current standards(SAW-induced electron pump)
    - Objective: 1 nA, uncertainty of 10<sup>-8</sup>
  - Frequency standards based on an optical lattice clock
    - Objective: uncertainty below 10<sup>-17</sup>
  - Noise thermometry
    - Shot noise thermometry, Jonson noise thermometry
  - Quantum-based force standards
    - Objective: sub-pN
- ❖ Nano-quantum based extreme measurement technologies
  - Generation and entanglement of single photon
    - Objective: 10 qubits quantum computing
  - High-resolution spectroscopy with low-temperature detectors
    - Objective: energy resolution of 1 eV@6 keV
  - Nanoscale thermal energy transport and conversion
  - Nanoelectromechanical systems for quantum detection
    - Objective: GHz resonating for quantum detection

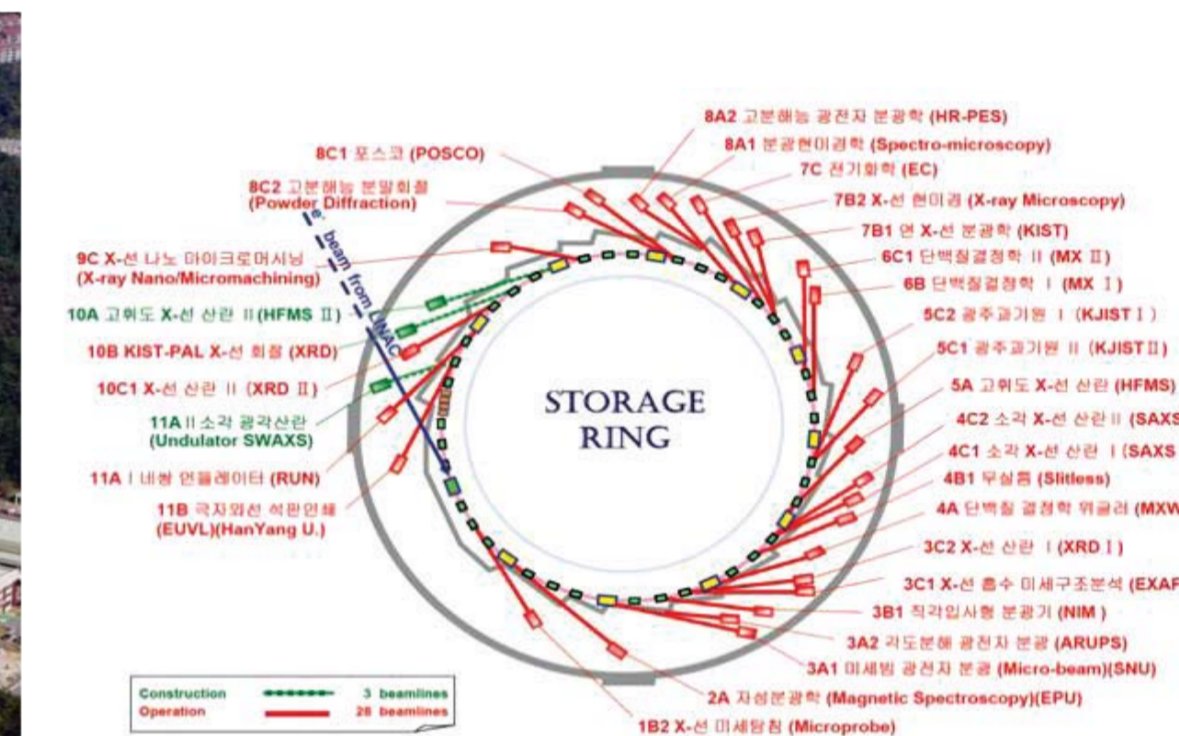


<Metallic magnetic calorimeter>



<6-qubit quantum computer>

### Pohang Light Source (PLS) PLS Beamlines



### Pohang Light Source

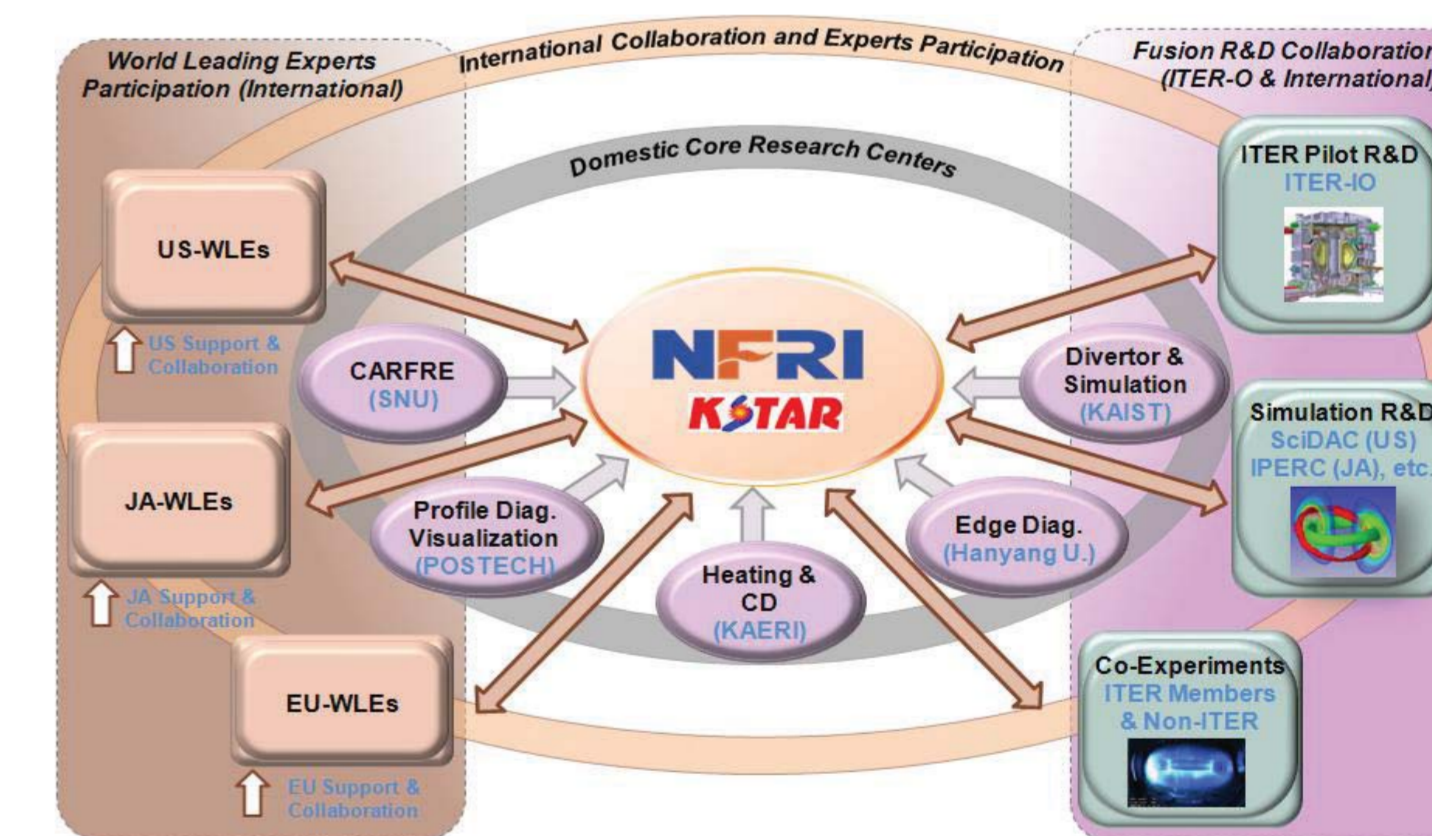
- ❖ Construction Budget(1988~1994)
  - ~US \$200 million
- ❖ Operating Budget(2008)
  - Government \$18.5 M+Endowment&other \$5.2M
- ❖ User Statistics(2007)

	University	R&D Lab	Industry	Foreign	Total
Experiments	704	70	48	15	837
Institutes	45	11	10	5	71
Users	2,199	207	103	44	2,553

### National Fusion Research Institute (NFRI)



KSTAR(Korea Superconducting Tokamak Advanced Research)



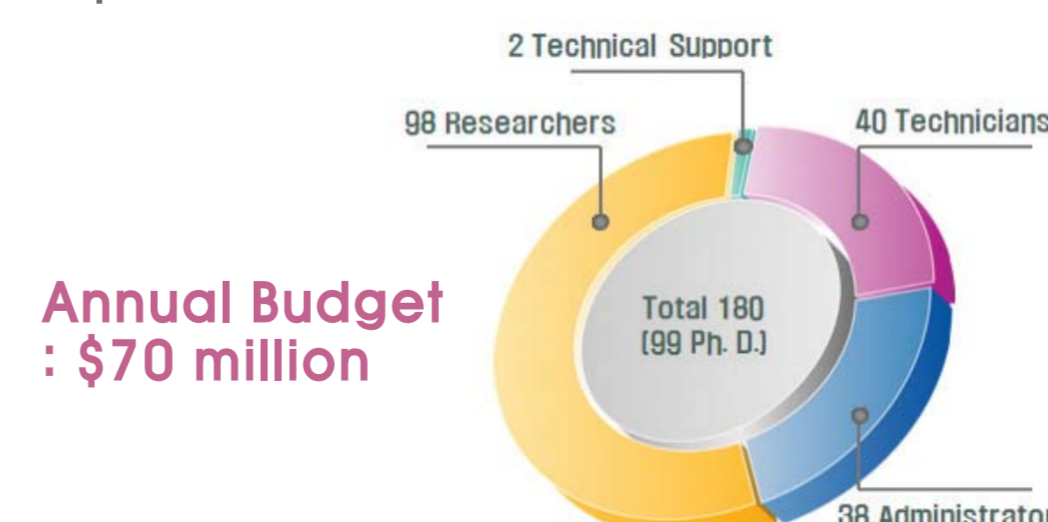
### Korea Institute for Advanced Study (KIAS)

- ❖ Founded in 1996
- ❖ Mission
  - Research in theoretical basic sciences
  - Training young scientists
  - Leading Korea's basic sciences
- ❖ Activities
  - Training research fellows through research activities
  - Inviting visiting scholars and hosting international conferences and workshops

### Korea Basic Science Institute (KBSI)

- ❖ Mission
  - Perform R&D support and joint research to promote basic science

#### State-of-the-Art Facilities at KBSI



Annual Budget : \$70 million

