

# Research and Opportunity at IBS CTPU

(Center for Theoretical Physics of the Universe)

Kiwoon Choi

(ICHEP 2016, Chicago)

# Introduction

IBS is a Korean-government-funded research institute established in 2011 under the Special Act on Establishment of and Support for International Science and Business Belts.

## **Key Missions**

- \* Conduct large-scale, long-term and group research in basic science
- \* Promote a global basic science network
- \* Foster the next generation of young talents

# Research Centers

IBS plans to establish a total 50 research centers by 2021.  
(average annual budget/center 7M USD)

At present (2016), 26 centers were established:



# Research Centers

3 of the 8 physics centers are for fundamental physics, which are participating in this special session:

Center for Underground Physics (**CUP**)

Center for Axion and Precision Physics Research (**CAPP**)

Center for Theoretical Physics of the Universe (**CTPU**)

# Persons who made this possible



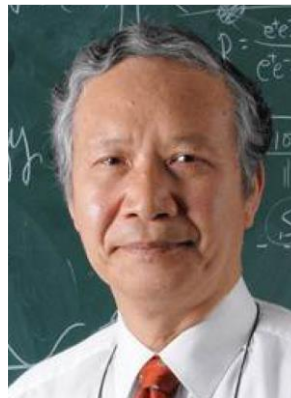
Prof. D.P. Min who proposed first the idea of IBS, and persuaded President of Korea, Mr. MB Lee



Prof. S.J. Oh, the founding president of IBS who strongly supported fundamental physics



Prof. M. Rho, a member of the IBS committee, who represented the field of fundamental physics



Prof. J.E. Kim, a key player behind the scene to establish CAPP, CTPU, CUP



Prof. Y.K. Kim, chair of the committee which decided to select CAPP, CTPU, CUP

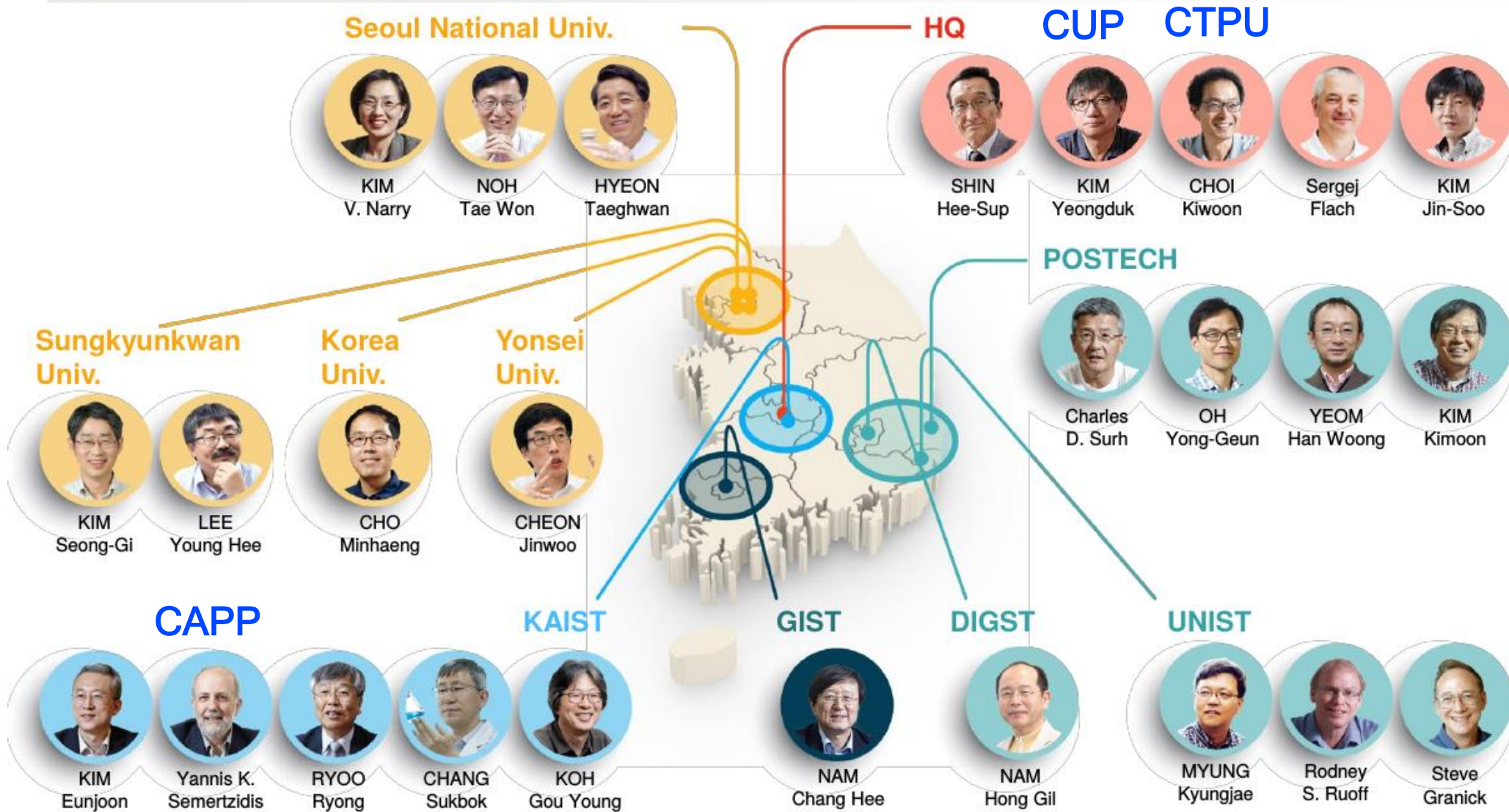
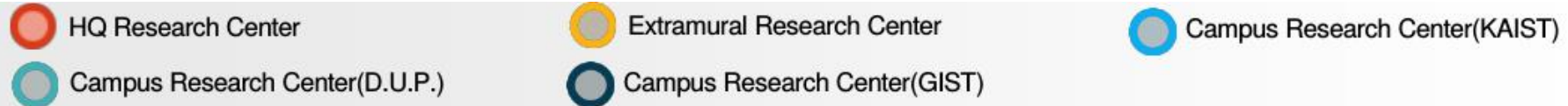
# 3 types of research centers

- HQ : Located in Daejeon HQ site (CUP, CTPU)
- Campus : Located in science & technology specialized universities such as KAIST (CAPP)
- Extramural : Located in non-specialized universities



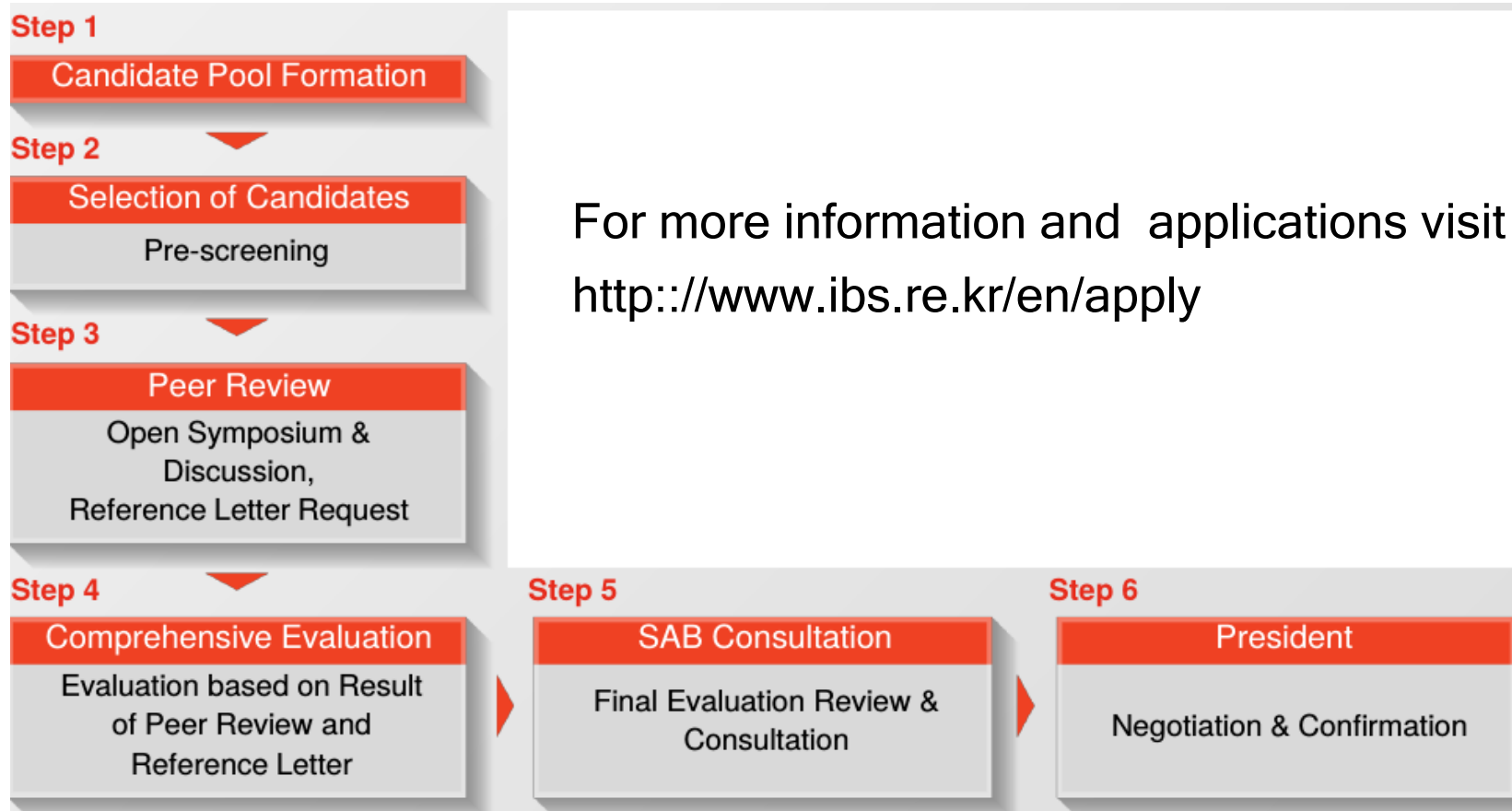


# Research Centers



# CTPU is taking a co-director system:

- Particle physics & cosmology (Kiwoon Choi, Nov. 2013)
- Field, string & gravity (Soo Jong Rey, July, 2016)
- We are looking for a co-director in the field of astroparticle physics or related subject.





# Young Scientists Fellowship



Provide researchers with  
opportunities to build  
independent research groups

Target researchers with less  
than five years' experience  
after obtaining Ph.D. or  
researchers under the age of  
40 with a Ph.D.



Offer annual research funding  
up to 300 million KRW for  
maximum five years.

300K USD/year  
for maximum 5 years

- Foster the next generation of leaders in basic science and help them build their scientific careers

For more information and applications, visit  
<http://www.ibs.re.kr/ysf/>

# Construction Plan for IBS HQ

(will host 15 research centers)



**2016**

Begin the 1<sup>st</sup> phase of construction

**2017**

Complete the 1<sup>st</sup> phase of construction

**2018**

Begin the 2<sup>nd</sup> phase of construction

**2021**

Complete construction

Located in Expo Science Park, Daejeon



# Location of IBS HQ





# Center for Theoretical Physics of the Universe

6 faculty members, 15 postdocs, 8 students,  
4 administrative staffs in CTPU



# CTPU Faculty members



## Kiwoon Choi

- \* Particle physics phenomenology:  
SUSY, axion-like-particles
- \* Particle Cosmology:  
Inflation, dark matter, baryogenesis



## Kyujong Bae

- \* SUSY
- \* Physics at Colliders(LHC & ILC)
- \* Particle Cosmology:  
Axion/axino dark matter,  
Baryo/leptogenesis



## Sanghyeon Chang

- \* Particle physics phenomenology:  
Extra dimension, Flavor physics,  
Extended Higgs sector
- \* Particle Cosmology:  
Dark matter, Axion cosmology



## Kenji Kadota

- \* The early Universe:  
Inflation, Baryo/leptogenesis
- \* Particle physics phenomenology:  
Dark Matter, Collider phenomenology
- \* The late Universe:  
Large scale structure, CMB, Galaxy clusters



# CTPU Faculty members



## Hye-Sung Lee



- \* Dark matter & Neutrino physics
- \* New fundamental interactions:  
Dark photon, dark Z-boson
- \* Connecting Low-energy new physics  
and LHC physics

## Myeonghun Park



- \* Collider physics:  
New methods to search for new  
particles and probe Higgs sector,  
Monte Carlo Simulations,  
Precision QCD / Jet substructure
- \* Dark matter phenomenology

Postdocs and Graduate students are actively working with our faculties and collaborators from outside the center.





We have an active visitor program, and we welcome any visitor who is interested in the researches at CTPU.

If interested, please visit <http://ctpu.ibs.re.kr/> and contact any CTPU faculty.

We look forward to seeing you at IBS-CTPU.

Thank you!