# Physics plan in Japan

<u>Large-scale projects</u>

- – PACS Collaboration (on K-Computer and at Tsukuba)
- – JLQCD Collaboration (at KEK)

<u>Supports</u>

- – HPCI Strategic Program Field 5 (FY2011~2015)
- – Post-K Priority Issues Theme 9 (FY2015-2019)

<u>Available ensemble on ILDG</u>

- – Same as April 2015 (ILDG23)

# Available configuration ensembles

(Copied from Slide for ILDG23 by Y. Kuramashi)

| flavors | fermion/ gluon action | machine collaboration | a(fm) | lattice | pi/rho | approx #configs | status |
|---|---|---|---|---|---|---|---|
| 2 | Wioson-clover/ Iwasaki (2001) | CP-PACS/Tsukuba CP-PACS | 0.20 | 12^3x24 | 0.8-0.55 | 1000x4 | available |
| | | | 0.15 | 16^3x32 | 0.8-0.55 | 1000x4 | |
| | | | 0.10 | 24^3x48 | 0.8-0.55 | 800x4 | |
| 2+1 | Wilson-clover/ Iwasaki (2006) | ES/JAMSTEC SR8000/KEK CP-PACS/Tsukuba CP-PACS+JLQCD | 0.12 | 16^3x32 | 0.8-0.6 | 800x5x2 | available |
| | | | 0.10 | 20^3x40 | 0.8-0.6 | 800x5x2 | |
| | | | 0.07 | 28^3x56 | 0.8-0.6 | 600x5x2 | |
| 2 | overlap/ Iwasaki (2006) | BG/L/KEK JLQCD | 0.12 | 16^3x32 | 0.66-0.34 | 1000x6 | available |
| 2+1 | Wilson-clover/ Iwasaki (2008) | PACS-CS/Tsukuba PACS-CS | 0.09 | 32^3x64 | 0.6-0.2 | ≈2600 | available |
| 2+1 | Wilson-clover/ Iwasaki (2012) | T2K/Tsukuba Yamazaki et al. | 0.09 | 32^3x48 | 0.5 | 400 | available |
| | | | | 40^3x48 | | 200 | |
| | | | | 48^3x48 | | 200 | |
| | | | | 64^3x64 | | 300 | |

# PACS Collaboration: status and plan

2+1 flavor QCD on K computer
- – Iwasaki + clover with stout smearing
- – DDHMC w/ MP for ud and UV-filtered PHMC for s

Status and plan
- – 2+1 flavor QCD at physical pt. on 〜$(8fm)^3$ with a~0.1fm
- – Generation was completed
- – Spectrum, light nuclei, LECs in ChPT, form factors, …

Machine at U.Tsukuba
- – HA-PACS: GPU cluster (2012.2〜)
- – COMA: MIC cluster (2014.4〜)
- – Post T2K: KNL ckuster (2016.12〜)

# JLQCD Collaboration: status and plan

## 2+1 flavor QCD

- Symanzik + Mobius domain-wall (stout link smeared)
- Residual mass < 1 MeV

## Status and plan

- $1/a$ = 2.4, 3.6, 4.5 GeV, L=2.7 fm ($32^3$, $48^3$, $64^3$)
- $m_p$ = 230, 300, 400, 500 MeV
- Statistics: 10,000 MD time each
- Flavor physics, chiral dynamics, etc.

## Machines at KEK

- Hitachi SR16000 (2011.9～)
- IBM Blue Gene/Q (2012.4～)