

# Site Report on Physics Plan from Japan

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# Summary table of available configurations

## (as of 2015.4.24)

flavors	fermion/ gluon action	machine collaboration	a(fm)	lattice	pi/rho	approx #configs	status
2	Wilson-clover/ Iwasaki (2001)	CP-PACS/Tsukuba CP-PACS	0.20	12 <sup>3</sup> x24	0.8-0.55	1000x4	available
			0.15	16 <sup>3</sup> x32	0.8-0.55	1000x4	
			0.10	24 <sup>3</sup> x48	0.8-0.55	800x4	
2+1	Wilson-clover/ Iwasaki (2006)	ES/JAMSTEC SR8000/KEK CP-PACS/Tsukuba CP-PACS+JLQCD	0.12	16 <sup>3</sup> x32	0.8-0.6	800x5x2	available
			0.10	20 <sup>3</sup> x40	0.8-0.6	800x5x2	
			0.07	28 <sup>3</sup> x56	0.8-0.6	600x5x2	
2	overlap/ Iwasaki (2006)	BG/L/KEK JLQCD	0.12	16 <sup>3</sup> x32	0.66-0.3 4	1000x6	available
2+1	Wilson-clover/ Iwasaki (2008)	PACS-CS/Tsukuba PACS-CS	0.09	32 <sup>3</sup> x64	0.6-0.2	≈2600	available
2+1	Wilson-clover/ Iwasaki (2012)	T2K/Tsukuba Yamazaki et al.	0.09	32 <sup>3</sup> x48	0.5	400	available
				40 <sup>3</sup> x48		200	
				48 <sup>3</sup> x48		200	
				64 <sup>3</sup> x64		300	

# Strategic Field Program with K computer: status and plan

## 2+1 flavor QCD

- 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  $\sim(10\text{fm})^3$  with  $a\sim 0.1\text{fm}$
- Spectrum, light nuclei, LECs in ChPT, form factors, ...

## Machine at U.Tsukuba

- HA-PACS: GPU cluster (2012.2~)
- COMA: MIC cluster (2014.4~)

## JLQCD: status and plan

### Generation of new DW ensembles

- tree-level Symanzik gauge + (smeared) DW
- at three lattice spacings:  $1/a \sim 2.4, 3.6, 4.6$  GeV
- at pion masses: 500, 400, 300 MeV plus 230 MeV
- at two strange masses sandwiching physical  $m_s$
  
- generation has been completed at 10,000 traj. each
- measurements are on going, such as
  - lattice spacing through potential, Wilson flow
  - topology
  - pion, kaon and heavy decay constants
  - semileptonic decays
  - renormalization constants