

# Discussion

12/20/2012 @Matsuyama

# Physical process oriented approach: HSC/SWANS-theory

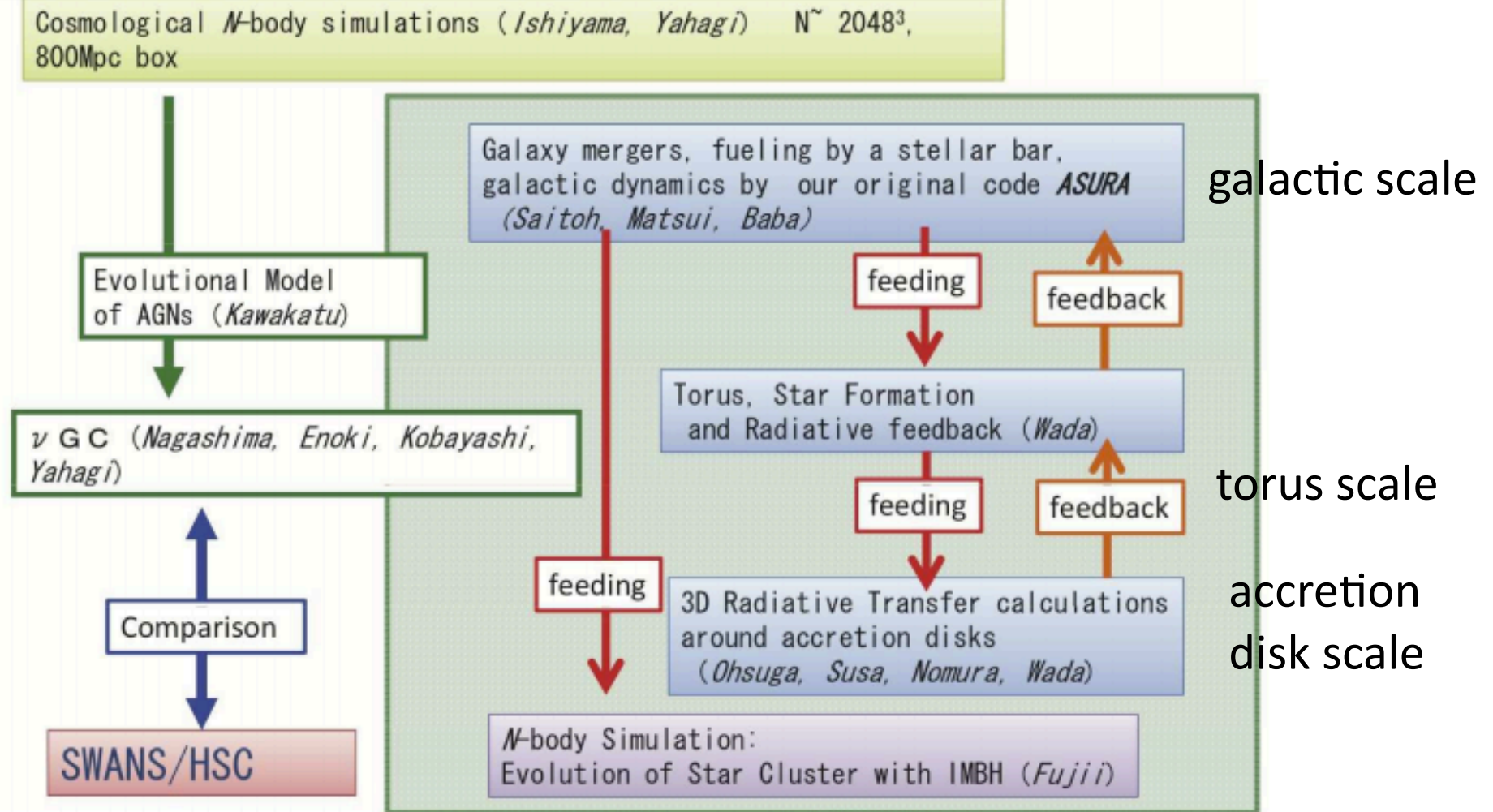
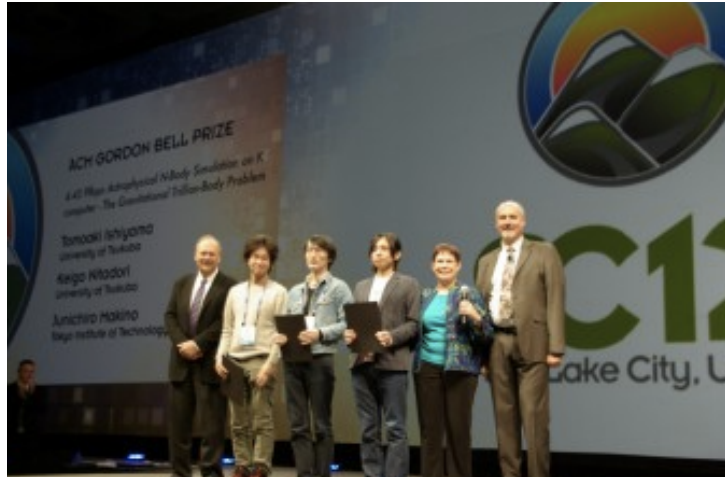


Figure 6.31: Concept of multi-scale theoretical model (see text)

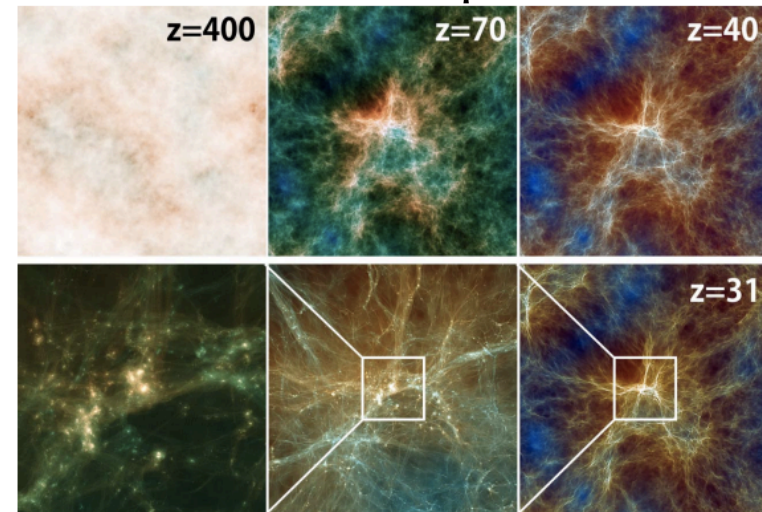
Final goal: Comparing SWANS/HSC observations with theoretical results, we try to understand physics of coevolution of SMBH and galaxies.

# Good News!



- **Ishiyama-san** was awarded the prestigious **Gordon-Bell prize** in 2012
- $N=4096^3$  ... any time
- $N=8192^3$ ,  $m=3 \times 10^8 M_{\text{sun}}$ , 1120Mpc/h box ... possible in 2014.
- **Collaboration with HSC/SWANS in terms of BH evolution in the Universe is helpful to get computational time in K-computer.**

## 17G particles



# action items

- Enoki/Kawakatu/Kobayashi/Nagashima
  - QSO number density: modify to fit to observation at low- $z$  ==> implement **Kawakatu model**

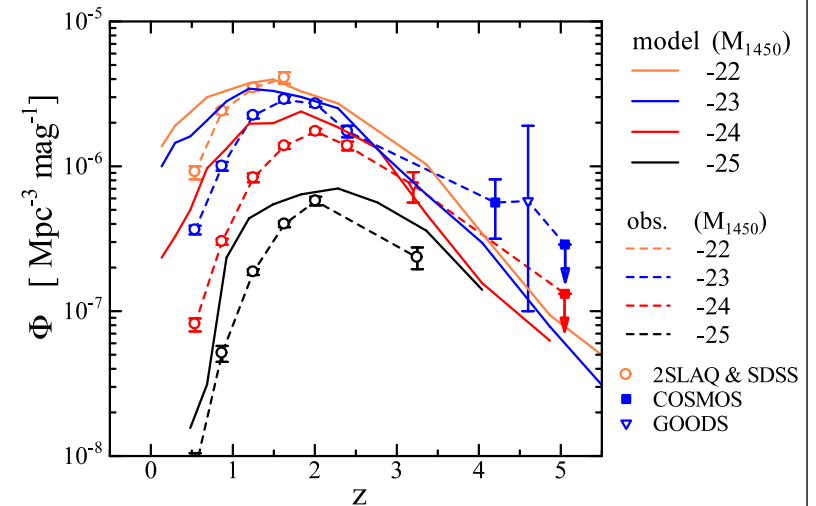
- Request from Strauss-san: Need more **sophisticated theoretical prediction** for clustering of galaxies around quasars at high  $z$
- Need **Nice Name** for the new SA model

- Wada/Nomura/Ohsuga

- modify Kawakatu model (w/ feedback)
- 3D simulations of line-driven winds
- Feedback from the line-driven wind to the outer part
- How does accretion/outflow rate depend on parameters ( $M_{\text{gas}}$ ,  $M_{\text{BH}}$ , etc.)?

- Ishiyama/Nagashima/Enoki

- cross-correlation function (400-800Mpc<sup>3</sup>)
- N-body simulation of DM: 4096<sup>3</sup>-8192<sup>3</sup> for 512-1024 Mpc/h box, w/  $m=3 \times 10^8$  Msun ==> merger history



Theory group meeting (observers are welcome!)



- May 2011: Ibusuki Onsen (Kagoshima)

- June 2012: Kirishima Onsen (Kagoshima)

~~Hot Spring for Theorists!~~

Hsc/Swans Theory!

- [Dec. 2012: Dogo Onsen (Ehime)]

- **March? 2013: Akiu Onsen (Sendai)?**  
**LOC chair = Akiyama san?**

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- what do theorists expect for multi-wavelength observations?
- ALMA
- box is large enough? at  $z=7$  BH
- quasar-galaxy correlation function
- obscured fraction