



**University of California
High-Performance
AstroComputing Center
(UC-HiPACC)**

The High-Resolution Galaxy Simulation Comparison Project

**Joel R. Primack, UCSC
(Director, UC-HiPACC)**

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The simulations to be discussed will all have resolution better than ~ 100 parsecs, which we hope will be enough to begin to resolve star formation in galactic disks. This project is motivated by recent improvements in hydrodynamical simulation codes, the availability of millions of cpu-hours for such simulations on high-performance computer systems, and the increasingly rapid acquisition of observational data on galaxies both nearby and out to very high redshifts. The discussions today and over the weekend will consider the current results and performance of various simulation approaches. We want to compare simulations of the same cosmological initial conditions by different codes to each other and to relevant observations. This will help to advance the state of the art of galaxy simulations and the understanding of the key astrophysical processes that control galaxy formation and evolution, including the flows of baryons into and out of galaxies, feedback from stars, supernovae, and massive black holes, and the impact of baryons on dark matter structure and substructure. We will try to model consistently similar recipes across codes, rather than allowing complete freedom in implementation. We will also discuss initial conditions for a range of galaxy masses, not just the Milky-Way-mass simulations that much earlier work has focused on.

The High-Resolution Galaxy Simulation Comparison Project: Calendar

This Kickoff Meeting: August 17-18-19, 2012

Roughly every two months: simulation comparison telecon

Roughly January 2013: web conference on HRGS Comparison

Summer 2013:

UC-HiPACC Summer School on Star Formation at UCSC

July 22 - August 9, directed by Mark Krumholz

Santa Cruz Galaxy Workshop - August 12-16

Followup Conference for HRGS Comparison Project

August 19-23 or August 19-30 at UCSC, or during

August 19 - September 6 at KITP Santa Barbara

**(KITP will make 20 office spaces available during their
Black Hole workshop, in response to proposal by Primack,
Madau, Mayer, and Teyssier)**

HRGS Comparison: Choices To Be Made Here

Initial Conditions to Simulate?

Galaxy Masses at $z \sim 0$: $\sim 10^{10}$, 10^{11} , 10^{12} , $10^{13} M_{\odot}$
with both quiet and busy merging trees

Astrophysics that all groups should try to include?

Optional additional astrophysics to include?

At what redshifts to compare simulations?

How to compare simulations, tools to use (yt, ...)?

2013 Followup HRGS Comparison Meeting:

1, 2, or 3 weeks? At KITP/UCSB or at UCSC?

Codes and People Participating in HRGS Comparison

Codes

People Here, Online via EVO*, and Not here (incomplete list)

SPH: AREPO

Hopkins, Keres*

SPH: Gadget

Hopkins, Kashi, Nagamine

SPH: Gasoline

Christensen, Governato, Guedes, Madau, Mayer, Quinn, Shen, Wadsley

SPH: SPHS

Read*

AMR: ART

Ceverino, Dekel, Gnedin, Kravtsov, Primack, Trujillo-Gomez, Zolotov

AMR: ENZO

Abel, Kim, Kuhlen, Madau, Onorbe, O'Shea*, Turk, Wise


AMR: RAMSES

Agertz, Dekel, Hahn, Teyssier

Other Participants

Bullock, Conroy, Goldbaum, Krumholz, Leitner, Robertson*, ...

I apologize for any mistakes! Please tell Ji-hoon Kim and me if you should be listed differently.



The Collaboration Network

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 [LHC Meetings](#) in July 2012:
CMS 1345 ATLAS 1207
ALICE 304 LHCb 201

NEWS

- **Aug 16** If you are using macos 10.8 and have a problem with Phoenix Duet or Plantronics, you need to install latest Java SE (7u6 or higher) from oracle.com as described [here](#) and problem will be fixed.
- **Aug 8** To all of the Janet community using EVO: Please note that the EVO

The Caltech EVO team wishes to express its thanks to the NSF, the LHC experiments, CERN, and the US LHC program funded by DOE and NSF, for their support of EVO.

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EVO booking for this meeting

Hello Joel Primack,
You have BOOKED a meeting in EVO (<http://evo.caltech.edu>).

Title: HRGS

Description: High Resolution Galaxy Simulation Comparison Project Meeting Saturday August 18 8:30-18:00 PDT

Community: Universe

Meeting Access Information:

- Meeting URL

<http://evo.caltech.edu/evoNext/koala.jnlp?meeting=MeMMMu2e2iDiDs9M9eDv9e>

- Phone Bridge

ID: 569 7689

Pacific Daylight Time (-0700)

Start 2012-08-18 08:30

End 2012-08-18 18:00

Japan Standard Time (+0900)

Start 2012-08-19 00:30

End 2012-08-19 10:00

Central European Summer Time (+0200)

Start 2012-08-18 17:30

End 2012-08-19 03:00

Eastern Daylight Time (-0400)

Start 2012-08-18 11:30

End 2012-08-18 21:00

- Skype (tm) (World-wide)

evo.phone

See: <http://evo.caltech.edu/evoGate/Documentation/extclient/skype/skype.html>

If you would like to add a telephone bridge at your institute, please contact EVO at evocontact@vrvs.org

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