Accessing cosmological simulations

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Groups:

NMSU: Klypin
UCSC: Primack
Stanford: Wechsler
AIP: Gottlober
Madrid: Yepes, Knebe
Jerusalem: Dekel, Hoffman, Ceverino
Chicago: Kravtsov, Gnedin
Granada: Prada
Warsaw: Lokas

+ T.J.Cox, M.Busha ...

CPU resources: total allocations 5-6M hrs

NASA Ames
Marenostrum (Barcelona)
Julich (Germany)
LRZ (Germany)
NERSC

Main projects:

- Bolshoi: 250Mpc, 8G particles, 1kpc resolution, N-body ART: **Magellanic Clouds +**
- bigBolshoi/MultiDark: 1Gpc, 8G particles, 5kpc: **Milky Way-size halos +**
- All 1e15Msun clusters re-simulated with 8 times smaller mass, full hydro+SF, GADGET
- Local Volumes: hundreds of MW-halos. Small halos complete 10km/s, N-body ART
- Galaxy Formation: hydro runs of individual galaxies. ART, resolution down to 10pc

100-200 Tb/year of high-res models

MultiDark Database

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Welcome to the MultiDark Database

The MultiDark database provides results from cosmological simulations performed within the MultiDark project. This database can be queried by entering SQL statements directly into the Query Form. The access to that form and thus access to the public & private databases is password protected - if you haven't done so, please register first.
More information on the simulations, the database, its design and the possibilities to access the data are described in the Documentation, where we also provide a little tutorial on SQL (SQL Step-by-Step) and some Frequently Asked Questions.

Registration

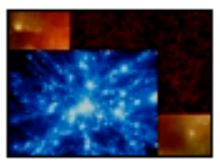
Access to the Query Form is password-protected - if you don't want to register, use the **public user**:
username: multidark_public
password: [none]
For gaining full access to all data in the database, registration via the Registration Form, also linked at the Registration page of the Documentation, is required.

Contact

For any comments, suggestions, help requests, bug reports etc., please don't hesitate to contact us by filling out our Contact Form.

Status

The current status of the database and the web application is reported in the section Status. This is the place to look for any news related to the simulations and the database.



Images & Movies

We have collected some images (and now also the first movies!) related to the MultiDark simulations at Images & Movies. Feel free to use them for talks, posters or just enjoy them!
You have created a nice movie yourself and want to share it with other people? Excellent! Just fill out the Contact Form and send us a short description, where to find the movie/picture, what it shows and which data and code was used to produce it. We will then consider adding it to this web page.

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Databases
- Bolshoi
- MDR1
- miniMDR1
- Spatial3D_db

Private (MyDB) Databases
- mdark_db (rw)

(context)

Query the MultiDark Database

Welcome Multi Dark test user!

Place your SQL statement directly in the text area below and submit your request by pressing one of the 'Query' buttons.
Please note, that there is a timeout and row limit for each query:
Streaming queries: return unlimited number of rows in CSV format and are cancelled after 420 seconds.
Browser queries: return a maximum of 1000 rows in HTML format and are cancelled after 30 seconds.

Query (stream) Query (browser) Maximum number of rows to return: 10

Help

Get all previous queries

Link - show Database
Link - show History

Demo queries

Click a button and the query text will appear in the query window.
Holding the mouse over the button will give a short explanation of the goal of the query.
These queries are described in detail on this page.

Q1 Q2 Q3 Q4 Q5

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http://www.multidark.org/MultiDark

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1.6 : Credits

You are welcome to use the simulation data in the database for your own scientific purposes without further consultation with the scientists who generated them. If you use the data in a publication or proposal please cite the appropriate paper(s):

- The Bolshoi Simulation: Klypin et al. 2010
- The MultiDark Simulation: Prada et al. 2010, will soon be submitted to MNRAS, arXiv:....

If you use galaxy data, then the relevant paper is:

- Trujillo-Gomez et al. 2010, soon to be finished

In order to acknowledge our efforts and also GAVO's support in making this data available for you, we would appreciate inclusion of the following sentence in the "Acknowledgements" section of papers which make significant use of our database(s):

> *"The MultiDark Database used in this paper and the web application providing online access to it were constructed as part of the activities of the German Astrophysical Virtual Observatory as result of a collaboration between the AIP and the MultiDark Consolider Project. We thank H. Enke (AIP), S. Gottlöber (AIP), A. Klypin (NMSU), K. Riebe (AIP), F. Prada (IAA-CSIC) and J. Primack (UCSC) for providing the simulations and constructing the MultiDark Database."*

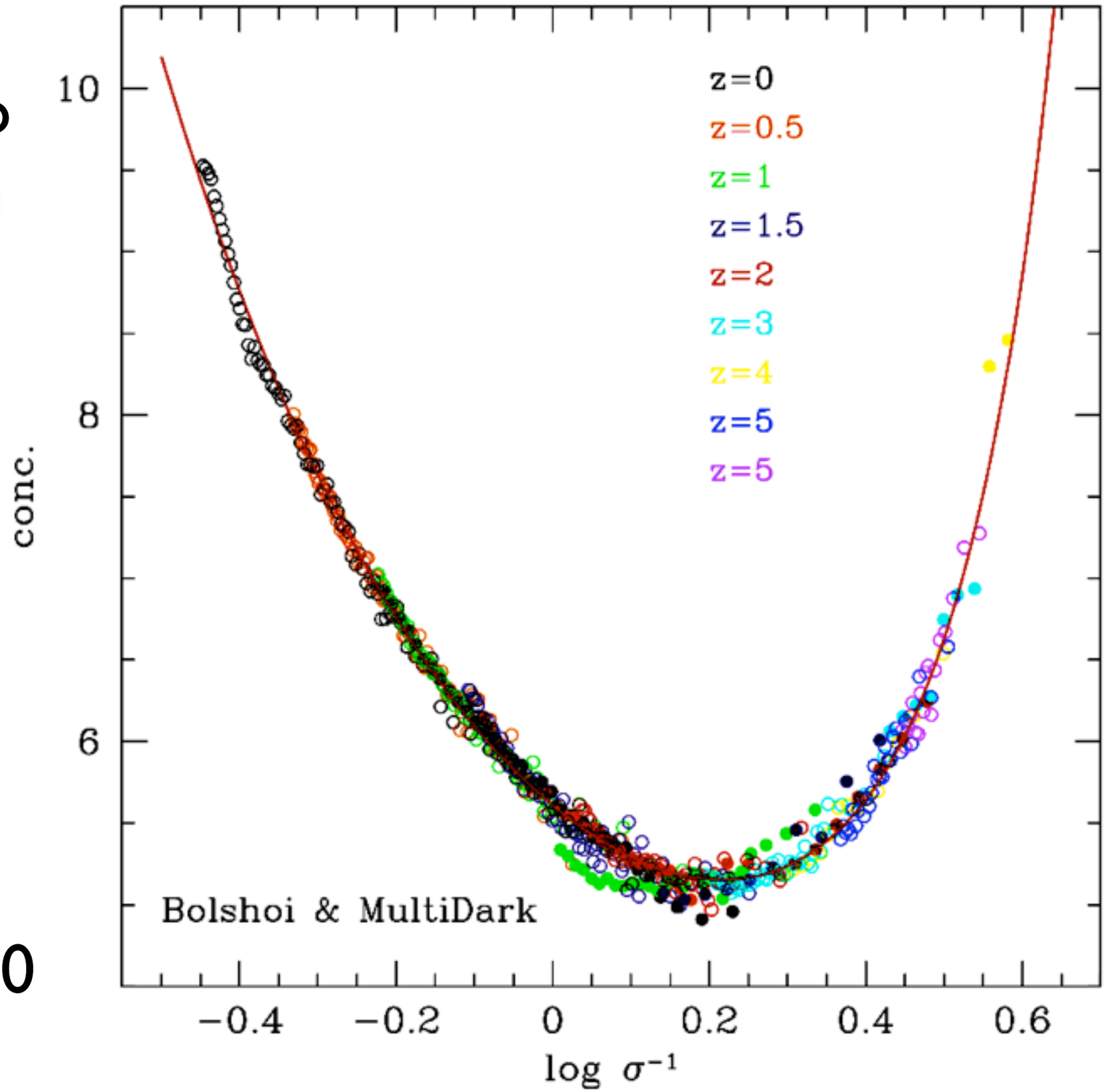
At this place the MultiDark Database Team would like to thank G. Lemson for assistence in setting up databases, providing the basic web application and his invaluable help with spatial queries.

- Simulations should be made easily accessible for different groups:

catalogs and raw data

- MultiDark database at AIP is a great start
- Few data centers (in US and in Europe) are needed
- Need to have support - personnel and hardware - for the centers

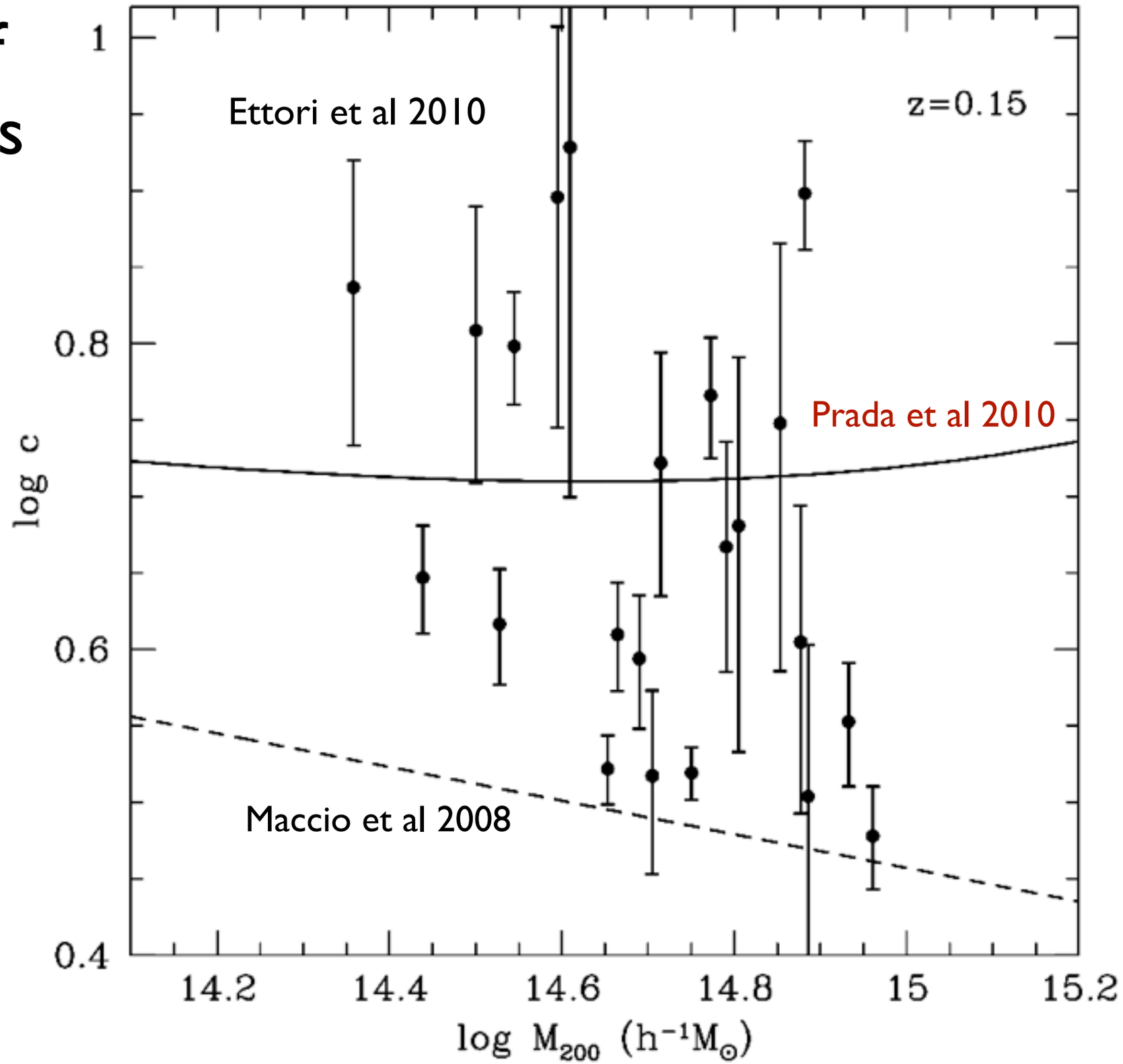
New way to represent halo concentration



Prada et al 2010

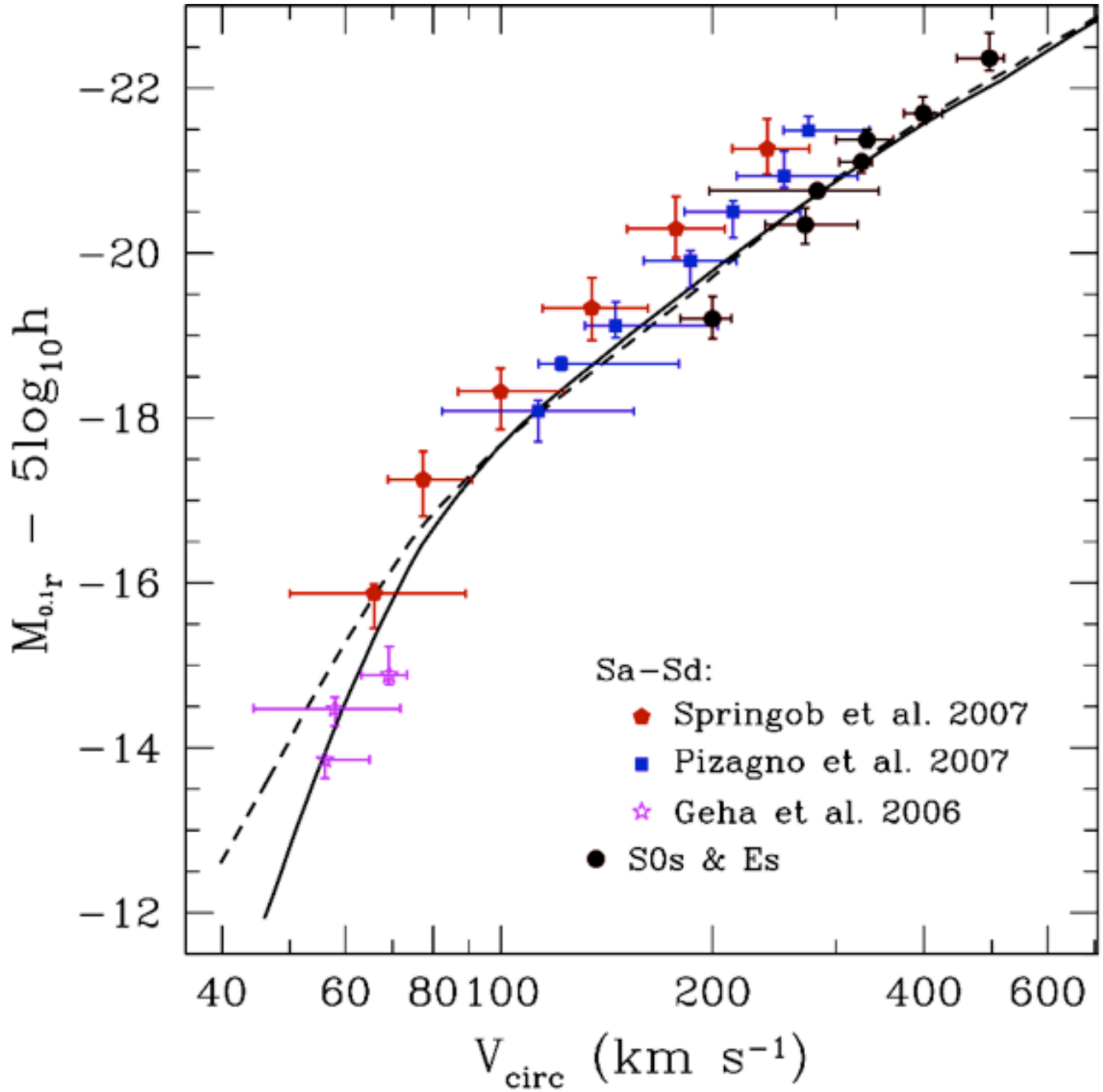
Concentration of clusters of galaxies

WMAP-7, sigma8 =0.82

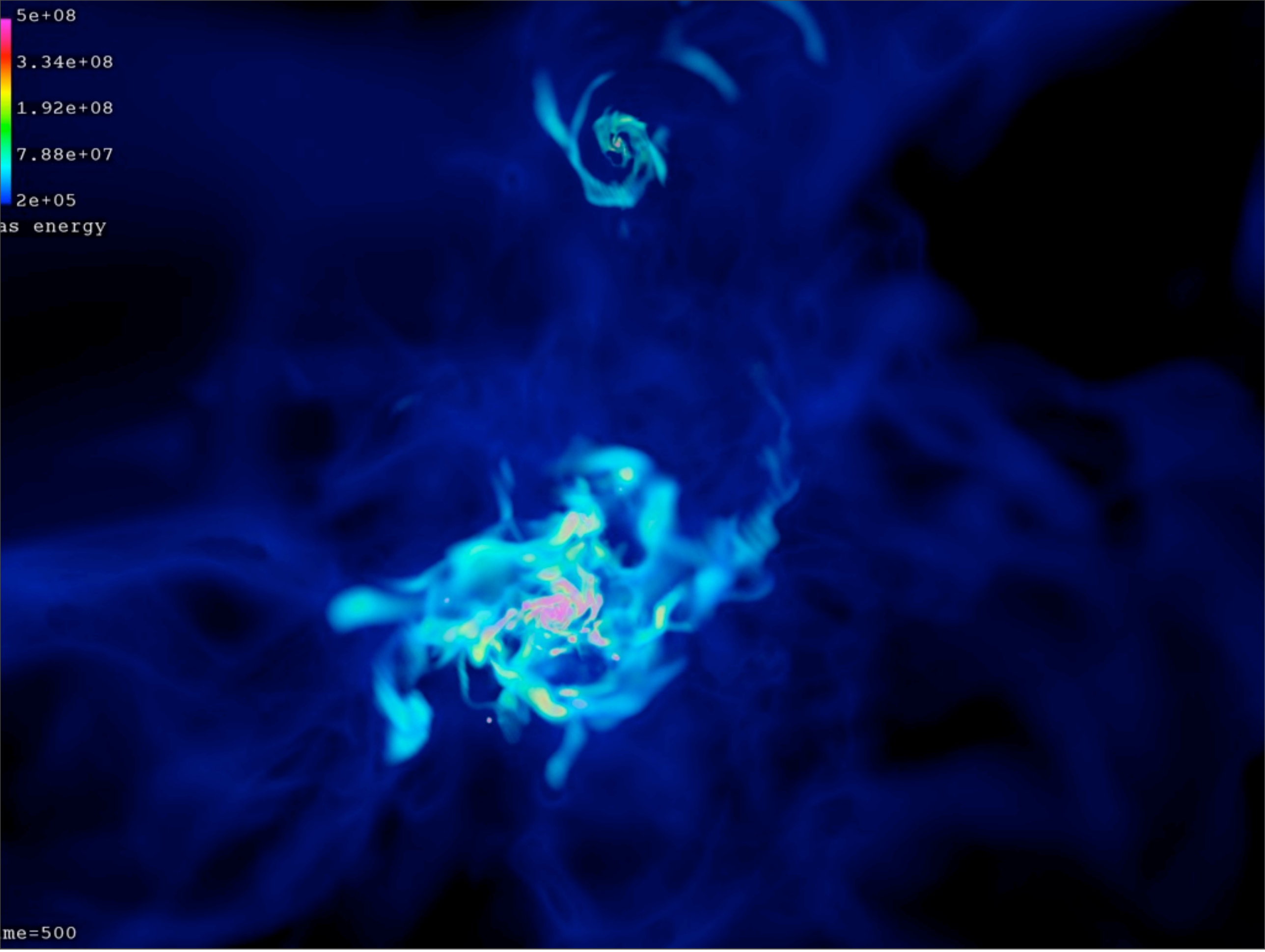


HAM - halo abundance matching

Luminosity function,
Stellar mass function,
Halo mass function



Friday, December 17, 2010



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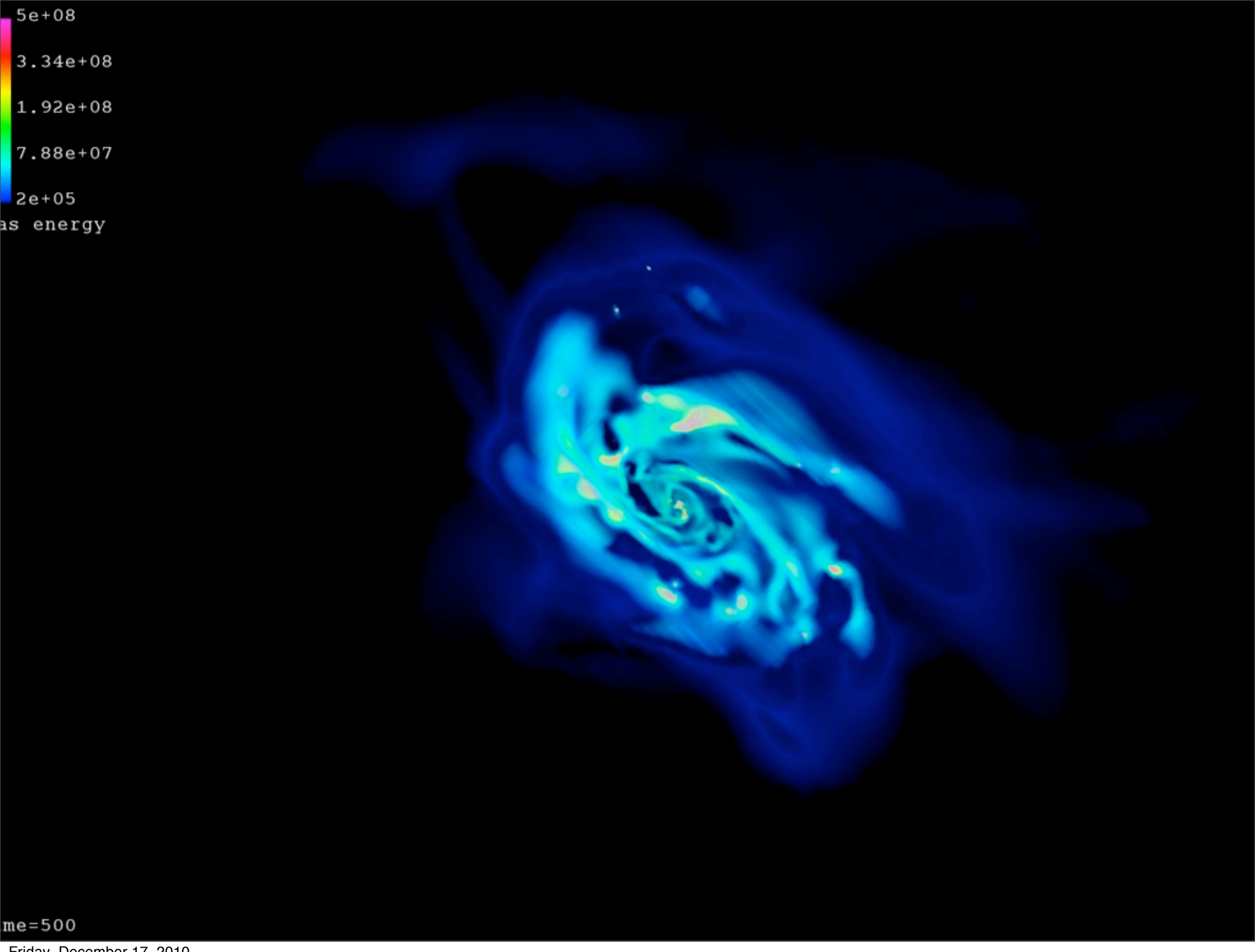

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