



NagBody lectures: Project TreeCorr

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Seminario de investigación,

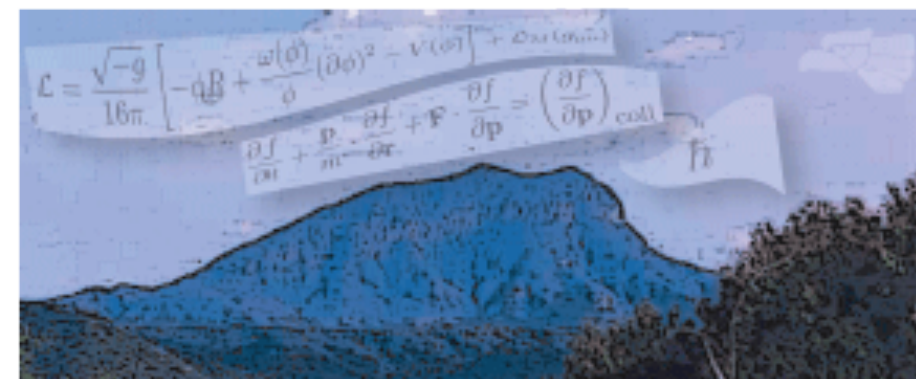
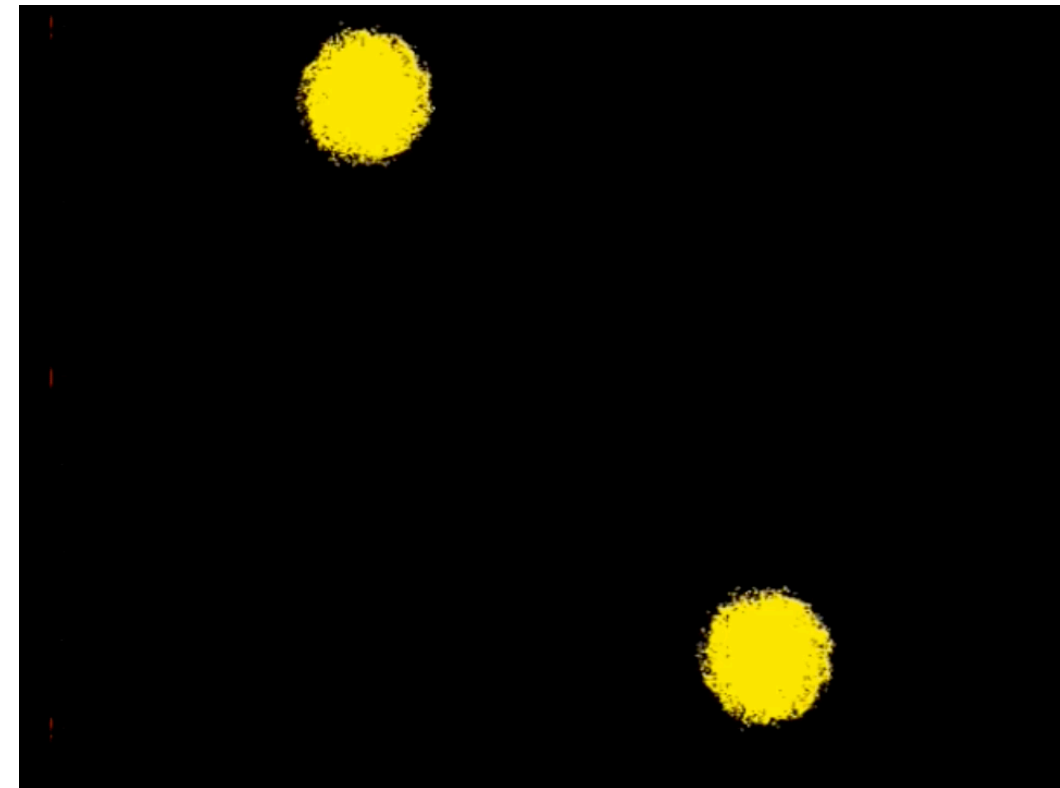
Departamento de Física,

Universidad de Guanajuato

3 de febrero al XX de junio de 2022

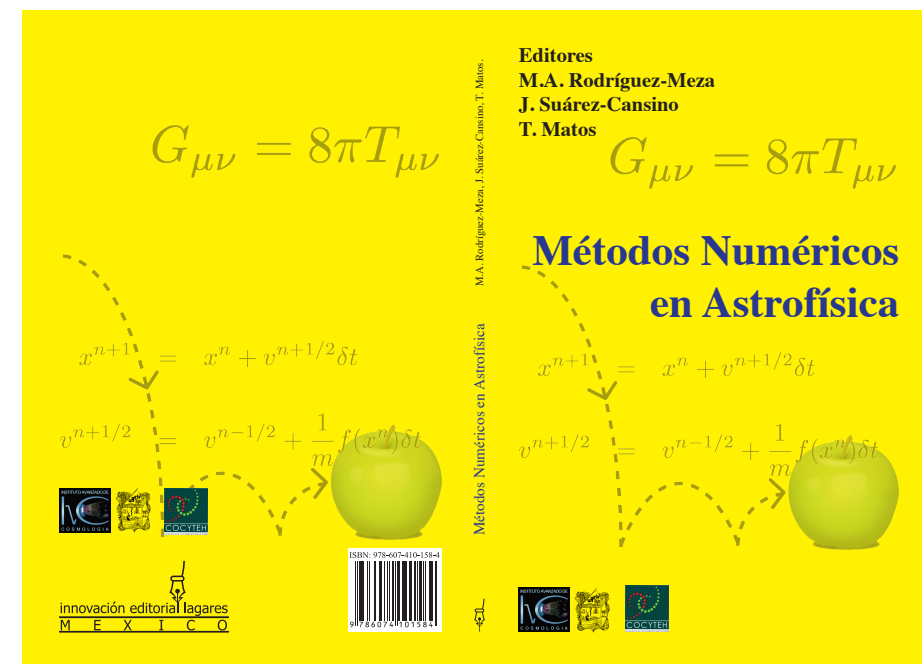
Sesiones virtuales (Zoom, Meet, etcétera)

quintessence
Group



References and material

- Cosmología numérica y estadística: NagBody kit (<http://bitbucket.org/rodriguezmeza>). Mario A. Rodríguez-Meza. And: https://github.com/rodriguezmeza/NagBody_lectures.git
- Métodos numéricos en astrofísica, capítulo I, Método de N-cuerpos en astrofísica. (https://www.researchgate.net/publication/316582859_Metodo_de_N-Cuerpos_en_Astrofisica)
- La estructura a gran escala del universo. Capítulo 22 en Travesuras cosmológicas de Einstein et al. https://www.researchgate.net/publication/316582400_La_estructura_a_gran_escala_del_universo_simulaciones_numericas
- https://www.researchgate.net/profile/Mario_Rodriguez-Meza
- https://www.researchgate.net/publication/314281416_Los_agujeros_negros_y_las_ondas_del_Dr_Einstein
- M.A. Rodríguez-Meza, Adv. Astron. 2012, 509682 (2012). arXiv: 1112.5201. (https://www.researchgate.net/publication/51967093_A_Scalar_Field_Dark_Matter_Model_and_Its_Role_in_the_Large-Scale_Structure_Formation_in_the_Universe)



Content:

TreeCorr project

Analyse data generated with:

- 2lptc
- picola
- powmes
- rockstar

From snaps and halo catalog obtained from picola and rockstar make the corresponding catalogs to input to TreeCorr and obtain:

- 2ptcf
- 3ptcf

Consider several realizations of N-body snaps, like number N of particles, size of the volume and cosmology parameters.

Compare with the correlations functions obtained with `cute_box`.

Visualize the snaps with `gadgetviewer`.



Content: Dependencies

Clone repository NagBody_pkg:

```
git clone https://github.com/rodriguezmeza/NagBody_pkg.git
```

and do:

- Configure .bashrc in your \$HOME: adding a line at the end:

```
test -r $HOME/NagBody_pkg/env_config/nagbodyrc.sh && . $HOME/NagBody_pkg/env_config/nagbodyrc.sh
```

- cd NagBody_pkg
- nmake install_dirs
- nmake install_openmpi
- Do the same for: cfitsio, fftw2, fftw3, gsl, lapack, OpenBLAS, hdf5, plplot

Do install the codes:

- picola, 2lptic, powmes, rockstar, cute_box, nplot2d...



Content:

Other dependencies

Linux: Anaconda3-2021.11-Linux-x86_64.sh

UBUNTU:: apt-get install

apt-get install gnuplot

sudo apt-get install gsl

sudo apt-get install plplot

sudo apt-get update

sudo apt-get update

sudo apt-get install gsl

sudo apt-get install gsl-dev

sudo apt-get install libgsl23

sudo apt-get --fixmissing

sudo apt-get --fixmissing install libgsl23

sudo apt-get --fixmissing install gsl-dev

sudo apt-get --fixmissing update

sudo apt-get install gsl-dev

sudo apt-get install -y x-window-system

sudo apt-get install zlib1g-dev

sudo apt-get install xorg openbox

sudo apt-get install xauth

sudo apt-get install xserver-xorg

sudo apt-get install xserver-xorg-core

sudo apt-get install tcl

sudo apt-get install tcl-dev

sudo apt-get install tk

sudo apt-get install tk-dev

sudo apt-get install gtk+2.0

sudo apt-get install libcairo2-dev

conda install numpy

conda install spicy

conda install matplotlib

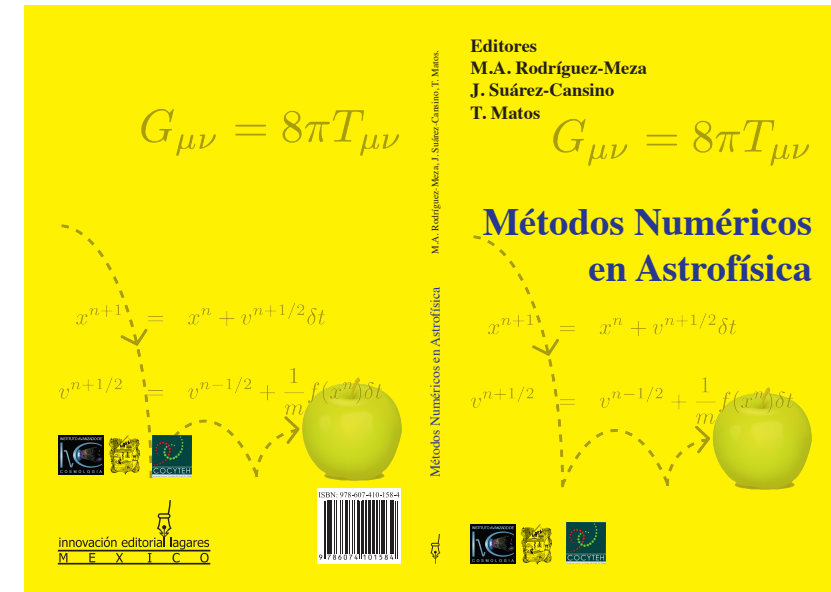
conda install Cython

conda install astropy



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- M.A. Rodríguez-Meza, Adv. Astron. 2012, 509682 (2012). arXiv: 1112.5201. (https://www.researchgate.net/publication/51967093_A_Scalar_Field_Dark_Matter_Model_and_Its_Role_in_the_Large-Scale_Structure_Formation_in_the_Universe)



See you!

