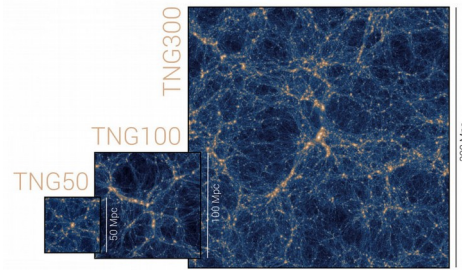


IllustrisTNG

Science Workshop 2018

Mon - Wed, October 15-17, 2018



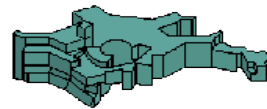
The focus of this meeting lies on discussing science results obtained in analysing IllustrisTNG, but some topics beyond these simulations will also be discussed, both from an observational and theoretical perspective.

The workshop atmosphere will be informal and foster an open exchange of ideas and experiences with respect to the simulations, hence preliminary results and work in progress are very welcome, too. Frequent (but very polite) interruptions of speakers and lively discussion are actively encouraged.

We will also have extended discussions about science opportunities and limitations of the simulations. We want to exchange experiences about practical challenges in working with such large simulations and contemplate needs and wishes for future simulations. Please think ahead about such discussion points!

The meeting will take place at the

Max-Planck Institute for Astrophysics¹
on the Garching Science Campus, Germany



Max-Planck-Institute
for Astrophysics

Large Seminarroom E.0.11 at MPA

Note that contributions by individuals should not be more than 10 minutes each, plus 2 minutes of questions.

Discussion sessions involving everybody are marked in light blue in the following schedule.

AGENDA

Monday, October 15

9:00 - 10:30 Session 1 Chair: Mark Vogelsberger	Welcome / goals of the meeting	Volker Springel
	Galaxy Interactions in IllustrisTNG: An Overview	Kelly Blumenthal
	Morphological transformation of spiral galaxies in IllustrisTNG clusters	Gandhali Joshi
	Bar formation in cosmological simulations	Yetli Rosas Guevara
	Barred galaxies in Illustris simulation	Rui Guo
	The diverse history of counter- rotating galaxies	Tjitske Starkenburg

¹ For travel directions: <http://www.mpa-garching.mpg.de/2432/contact>

	Formation of Bulges and Disks on the Main Sequence	Sandro Tacchella
Coffee/Tea Break		
11:00 - 12:30 Session 2 Chair: Paul Torrey	Comparison of CGM around Milky Way type galaxies in Illustris and IllustrisTNG	Guinevere Kauffmann
	Comparing TNG to HI and H2 observations	Benedikt Diemer
	Baryons in the Cosmic Web of IllustrisTNG	Davide Martizzi
	The halo assembly bias effect for the neutral gas in IllustrisTNG	Hong Guo
	Chemical pre-processing of infalling galaxies	Anshu Gupta
	Modeling ICM profile with Illustris simulations	Ken Osato
Lunch Break		
14:00 - 15:30 Session 3 Chair: Rainer Weinberger	Kinematical and stellar population properties of the ICL	Magda Arnaboldi
	Kinematic decomposition of IllustrisTNG galaxies: growth of bulges	Min Du
	The Schwarzschild modelling for IllustrisTNG galaxies	Yunpeng Jin
	The effect of halo assembly in the kinematics of galaxy components and satellites	Chris Duckworth
	Stellar Orbits of TNG galaxies	Dandan Xu
	Stellar Velocity Dispersion: Linking Quiescent Galaxies to their Dark Matter Halos	Jabran Zahid
	"Observing" TNG kinematics at $z=2$	Hannah Übler
Coffee/Tea Break		
16:00 - 17:30 Session 4 Chair: Annalisa Pillepich	Discussion: Scientific challenges with TNG shortcomings of the simulations neglected scientific areas ideas for stuff one of us ought to do advantages/disadvantages of TNG relative to other sims	

Tuesday, October 16

9:00 - 10:30 Session 5 Chair: Shy Genel	ASTRO 3D - From the EoR to Galactic Archeology	Simon Mutch
	Expectations and Comparisons from TNG for blind molecular gas surveys with ALMA	Gergö Popping
	Early type galaxy halo kinematics	Claudia Pulsoni
	The stellar-to-halo mass relation of satellites vs. Centrals	Christoph Engler
	The optical morphologies of galaxies in IllustrisTNG	Vicente Rodriguez-Gomez
	The Illustris Radiative Transfer Project	Yuexing Li
	Fundamental planes in IllustrisTNG simulations	Lu Shengdong
Coffee/Tea Break		
11:00 - 12:30 Session 6 Chair: Laura Sales	Large-scale distribution of ionized metals in IllustrisTNG	María Celeste Artale
	TBD	Shy Genel
	Gravitational Lensing and Intrinsic Alignment	Stefan Hilbert
	Hunting down those responsible for the observed spatial distribution of gas in galaxies at $0 < z < 0.5$	Benedetta Vulcani
	How galactic feedback regulates the angular momentum content of haloes	Jolanta Zjupa
	Effects of the environment on the star formation activity of galaxies	Martina Donnari
Lunch Break		
14:00 - 15:30 Session 7 Chair: Federico Marinacci	AGN Feedback and the Low Redshift Lyman Alpha Forest	Blakesley Burkhart
	Linking galaxy morphology to AGN activity	Melanie Habouzit
	Black hole evolution in pseudobulges	Silvia Bonoli
	Black Hole Growth and Spin Evolution in Merging Galaxies	Laura Blecha
	Quiescence and Black Hole Feedback in TNG	Bryan Terrazas

	BH Feedback in Simba vs TNG	Romeel Dave
	Quasar feedback with Arepo-RT	David Barnes
Coffee/Tea Break		
16:00 - 17:30 Session 8 Chair: Dylan Nelson	Discussion: Practical challenges in working with TNG adequacy of tools and scripts merger trees, tracer particles which supplementary catalogs would be useful sufficiency of documentation contributions of auxiliary data for public data release	
Workshop Dinner, 19:00, Restaurant: "Garchinger Augustiner"		

Wednesday, October 17

9:00 - 10:30 Session 9 Chair: Lars Hernquist	Quenching Mechanisms in TNG galaxies	Elad Zinger
	Galaxy Cluster Mass Estimates with Deep Convolutional Neural Networks	Michelle Ntampaka
	Massive galaxy demographics and their shifts over cosmic time	Sarah Wellons
	Insights into galaxy mass quenching in the IllustrisTNG simulation using global morphological diagnostics	Elena D'Onghia
	Structural transformations of galaxies from CANDELS	Mauro Giavalisco
	X-ray Scaling Relations in Massive Early-Type Galaxies	Nhut Truong
	X-ray and SZ scaling relations in IllustrisTNG	Ana-Roxana Pop
Coffee/Tea Break		
11:00 - 12:30 Session 10 Chair: Rüdiger Pakmor	Dark matter fractions in IllustrisTNG galaxies	Mark Lovell
	TBD	Erica Nelson
	Zoom-in simulations based on Illustris and Illustris-TNG	Martin Sparre
	Baryonic imprints on galaxy-galaxy lensing profiles	Malin Renneby
	Simulating galaxy formation with the TNG model in $f(R)$ -gravity	Christian Arnold

	Baryonic effects on power spectrum responses and covariance	Alexandre Barreira
	JWST predictions with TNG50+TNG100+TNG300: dust modelling and early results	Mark Vogelsberger
Lunch Break		
14:00 - 15:30 Session 11 Chair: Rahul Kannan	The connection between satellites and infall halos	Jingjing Shi
	Globular cluster tagging in Illustris	Laura Sales
	TBD	Federico Marinacci
	Jellyfish galaxies in TNG	Kiyun Yun
	TNG50: Early science results and status update	Dylan Nelson
	MHD TNG50	Rüdiger Pakmor
	The evolution of galaxy stellar and gaseous structures across cosmic times: insights from TNG50	Annalisa Pillepich
Coffee/Tea Break		
16:00 - 17:30 Session 12 Chair: Volker Springel	Discussion: Future simulation needs What should a next generation of simulations deliver? What physics modelling do we need to improve most? How can we make it easier to compare to observations?	

Registered Participants

Nicola Amorisco (MPA)
Magda Arnaboldi (ESO)
Christian Arnold (ICC)
María Celeste Artale (U. of Innsbruck)
Mohammadreza Ayromlou (MPA)
David Barnes (MIT)
Alexandre Barreira (MPA)
Laura Blecha (U. of Florida)
Kelly Blumenthal (CfA / UH Manoa IfA)
Silvia Bonoli (CEFCO/DIPC)
Blakesley Burkhart (CfA)
Yeimy Camargo (U. Nac. de Colombia)
Elena D'Onghia (U. of Wisconsin)
Romeel Dave (U. of Edinburgh)
Guilia Despali (MPA)
Benedikt Diemer (CfA)
Martina Donnari (MPIA)
Min Du (KIAA, Peking University)
Chris Duckworth (St Andrews)
Christoph Engler (MPIA)
Moritz Fischer (MPIA)
Francesca Fragkoudi (MPA)
Shy Genel (CCA)
Mauro Giavalisco (Umass)
Carlo Giocoli (OAS-INAF)
Hong Guo (Shanghai Astr. Observ.)
Rui Guo (NAOC)
Anshu Gupta (U. of New South Wales)
Melanie Habouzit (CCA)
Lars Hernquist (CfA)
Stefan Hilbert (Excellence Clust. Univ.)
Yunpeng Jin (NAOC)
Gandhali Joshi (MPIA)
Rahul Kannan (CfA)
Guinevere Kauffmann (MPA)
Simon Mutch (ASTRO 3D)
Yuexing Li (Penn State)
Mark Lovell (U. of Iceland)
Federico Marinacci (CfA)
Davide Martizzi (U. of Copenhagen)
Allison Merritt (MPIA)
Bhawna Motwani (Columbia / CCA)
Daisuke Nagai (Yale)
Dylan Nelson (MPA)
Erica Nelson (CfA)
Michelle Ntampaka (Harvard)
Ken Osato (U. of Tokyo)
Rüdiger Pakmor (MPA)
Annalisa Pillepich (MPIA)
Gergö Popping (MPIA)
Claudia Pulsoni (MPE)
Ana-Roxana Pop (CfA)
Malin Renneby (LMU/ANL/Kavli Chic.)
Vicente Rodriguez-Gomez (JHU)
Yetli Rosas Guevara (CEFCO/A. Bello)
Laura Sales (UC Riverside)
Sebastian Schulz (MPIA)
Lu Shengdong (NAOC)
Jingjing Shi (KIAA, Peking University)
Debora Sijacki (Cambridge)
Martin Sparre (Potsdam University)
Volker Springel (MPA)
Tjitske Starkenburg (CCA)
Sandro Tacchella (CfA)
Bryan Terrazas (U. of Michigan)
Paul Torrey (U. of Florida)
Nhut Truong (MTA-Eötvös Loránd U.)
Hannah Übler (MPE)
Mark Vogelsberger (MIT)
Benedetta Vulcani (INAF-OaPD)
Rainer Weinberger (CfA)
Sarah Wellons (Northwestern)
Dandan Xu (Tsinghua)
Robert Yates (MPA)
Kiyun Yun (MPIA)
Jabran Zahid (CfA)
Elad Zinger (MPIA)
Jolanta Zjupa (HITS)