NBIA Summer School on Astrophysical Plasmas – From Planets to Galaxies

The Niels Bohr International Academy

August 28 – September 01, 2017, Copenhagen

- Name: MYWISH ANAND
- Currently: M.Sc. Computational Physics (1st year)
- Institution: Central University of Punjab, India
- Contact Info: Mywish@physics.org

- Research Motivations: Computational Astrophysics, Galaxy Evolution, Magnetic Reconnection
- Most relevant courses: Classical Electrodynamics, Relativity
- Programming Languages: C and C++
- Software & Plotting Packages: MATLAB, Scilab, GNUPLOT
- Programming Experience: around 1 year
- Research Experience: around 10 months

My Curiosity and Learning Goals from the School …

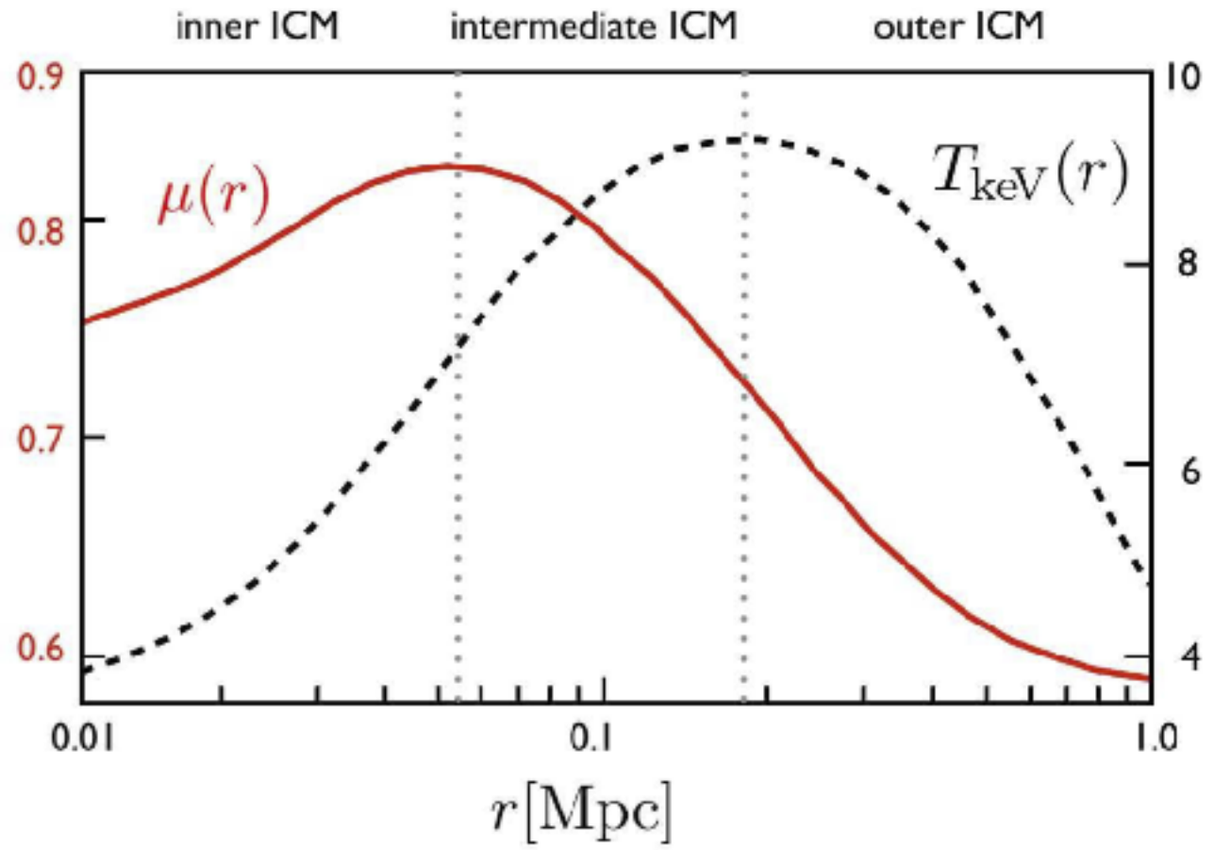
The Niels Bohr International Academy

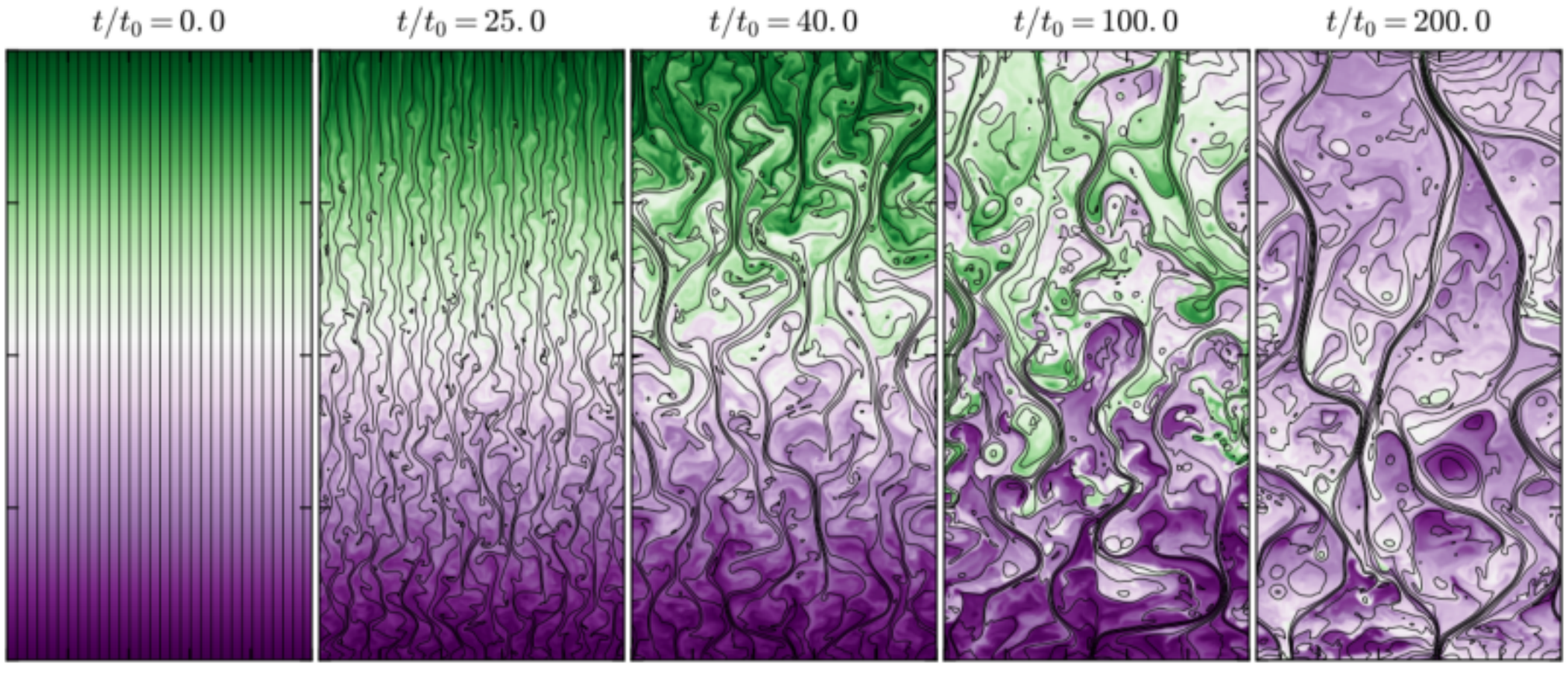
Plasma instabilities in the intracluster medium

Name: Thomas Berlok
Advisor: Prof. Martin Pessah

Interested in Astrophysical fluid dynamics

Currently working on understanding the physics of the low density gas between galaxies in galaxy clusters.





Asmita Bhandare

(Max Planck Institute for Astronomy)

bhandare@mpia.de

Research Interests: Star formation, formation and evolution of circumstellar disks.

- B.Sc. in Physics @ University of Pune, India in 2012.

- M.Sc. in Astrophysics @ University of Bonn, Germany in 2015.

  Thesis: Effects of inclined star-disk encounter on protoplanetary disk size.

  Supervisor: Susanne Pfalzner, MPIfR, Bonn.

- PhD in Astronomy @ MPIA, Heidelberg, Germany since July 2016.

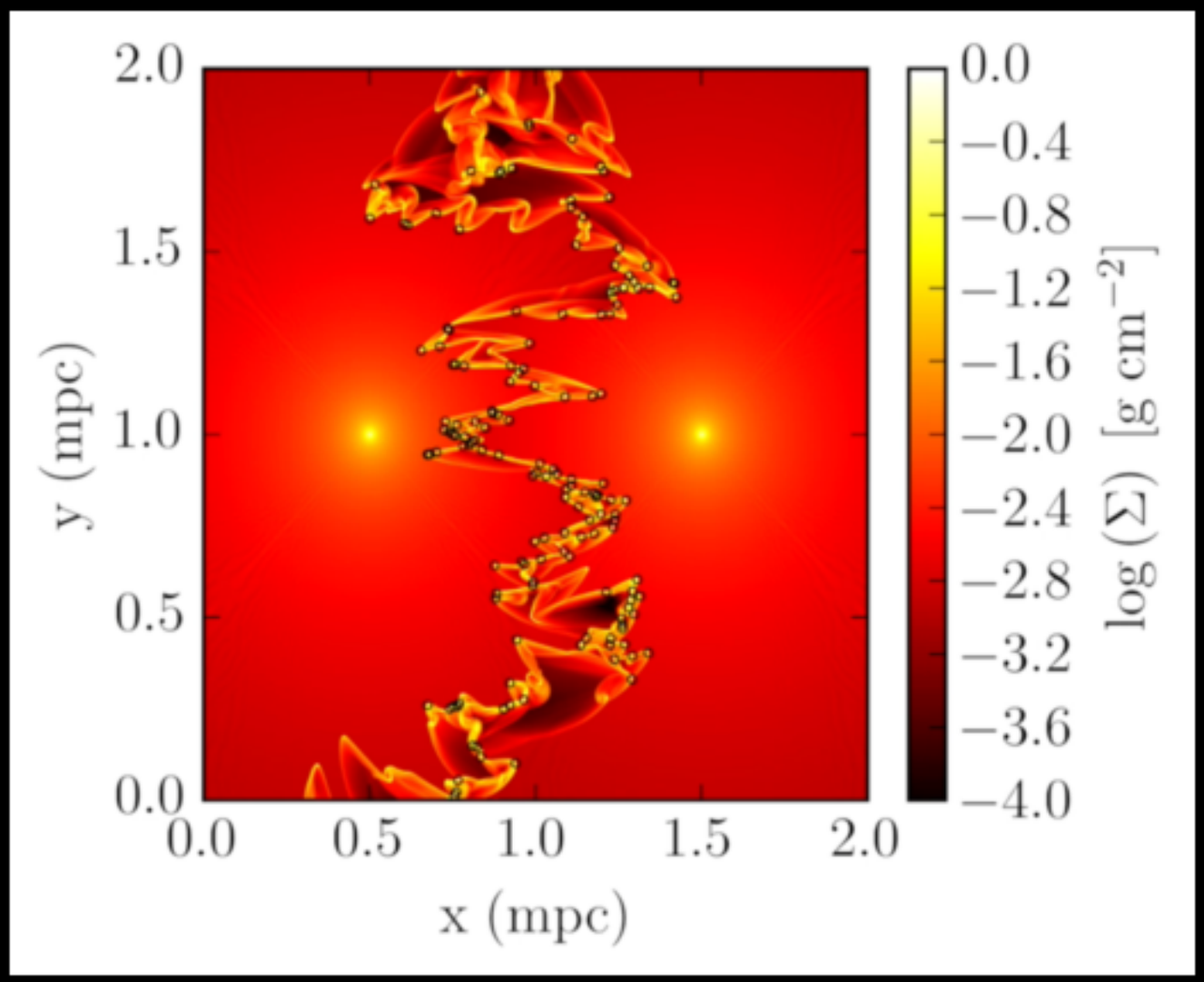
  Thesis: Numerical simulations of low mass star formation.

  Supervisors: Thomas Henning (MPIA) , Rolf Kuiper (University of Tuebingen) and Christian Fendt (MPIA).

Diego Calderón

PhD student
Pontificia Universidad Católica de Chile

Adviser: Professor Jorge Cuadra



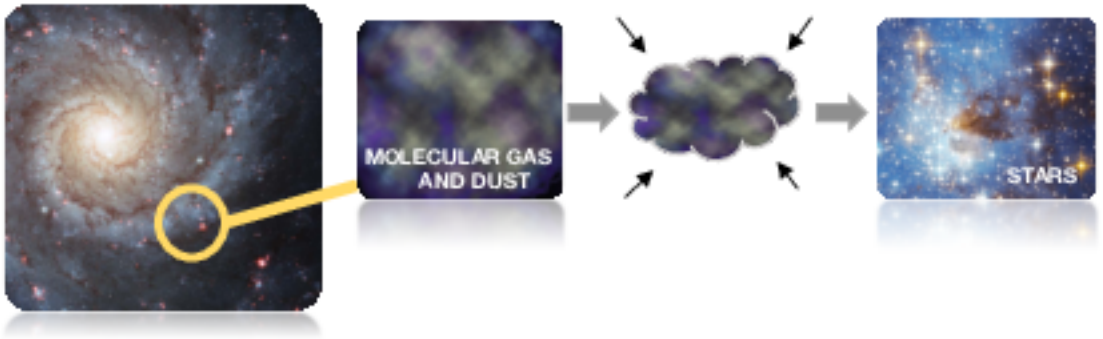
Research interests

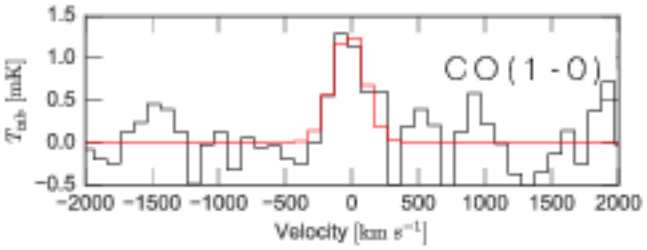
Colliding wind binaries
Galactic Centre
Numerical hydrodynamics

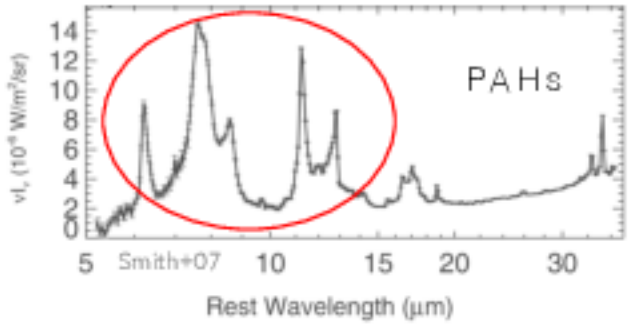
Isabella Chi Gieseler Cortzen

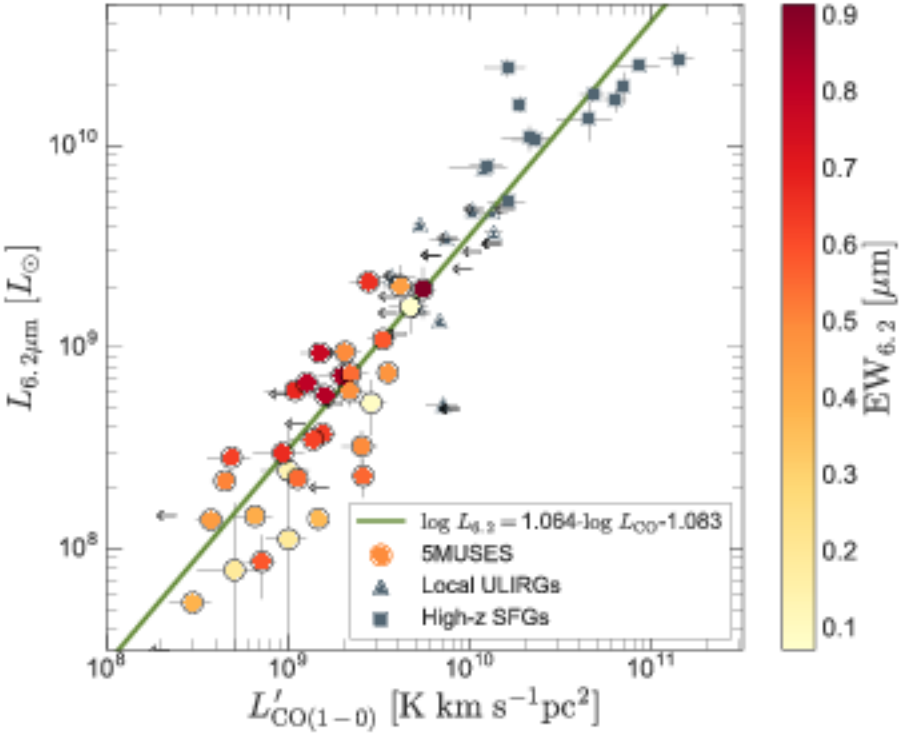
Ph.D. student at Dark Cosmology Centre
University of Copenhagen

- Examine star formation in galaxies across cosmic time
- Linking molecular gas mass (CO lines) and warm dust emission (PAHs)
- 5MUSES galaxies with CO(1-0) observations:
  Bridge the gap between local and high-redshift galaxies









cortzen@dark-cosmology.dk

August 2017

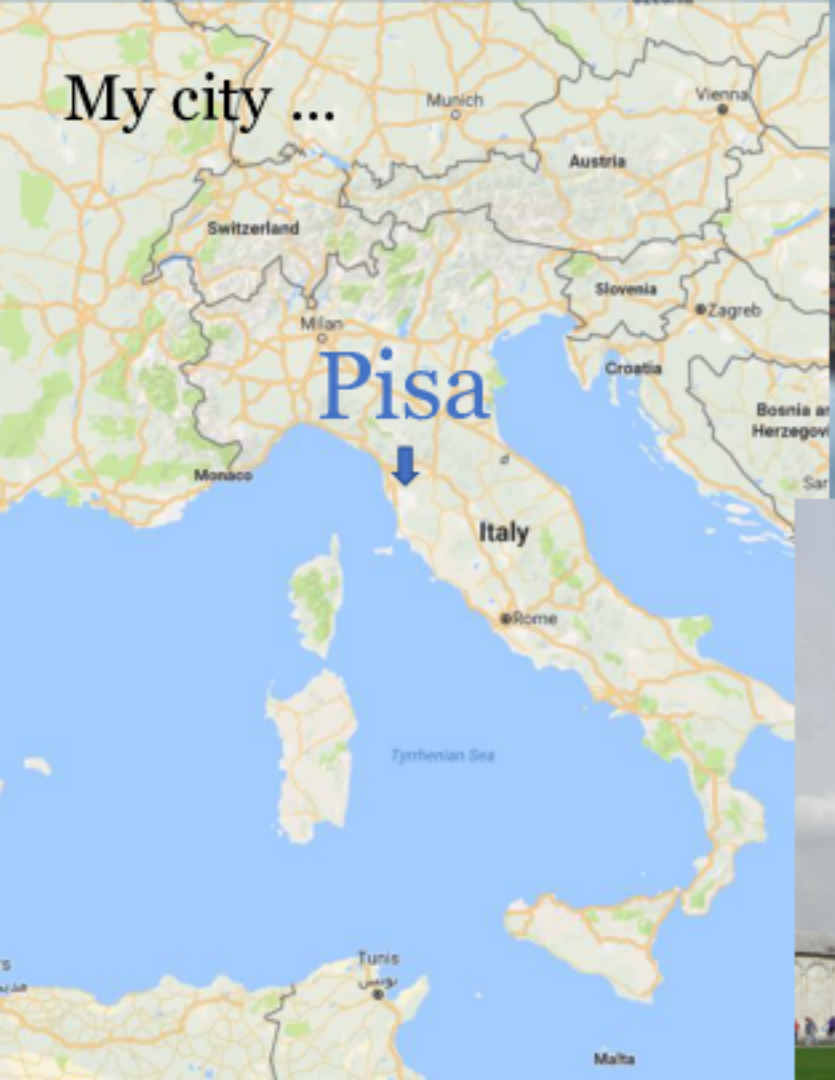
Personal Info Slides

Davide Decataldo

Scuola Normale Superiore of Pisa
(Italy)

davide.decataldo@sns.it

My city ...


Munich
Vienna
Austria
Switzerland
Slovenia
Zagreb
Milan
Pisa
Croatia
Monaco
Italy
Rome
Tyrrhenian Sea
Tunis
Malta

Scuola Normale Superiore of Pisa

Pisa

Paris
France
Switzerland
Milan
Monaco
Andorra
Barcelona
Madrid
Spain
Valencia
Granada
Málaga
Algiers
Tunis
Malta
Slovakia

Master Degree in Astrophysics

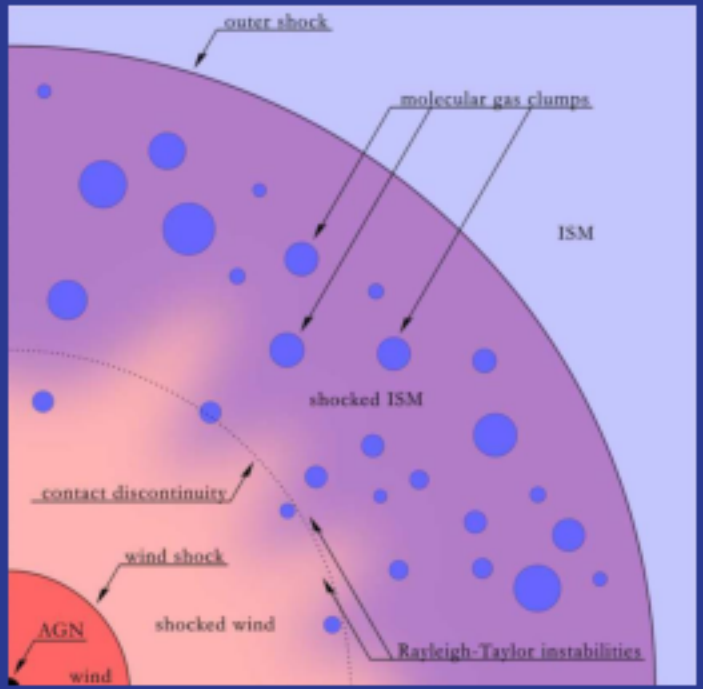
- Fluid Dynamics
- Stellar Physics
- Cosmology

Master Thesis

Evolution of Molecular Clumps in Quasar Outflows

Supervisor: Prof. Andrea Ferrara

Evolution of Molecular Clumps in Quasar Outflows



Zubovas & King 2014

Experiences:

- 2015 Cosmology Summer School
  Jan Kochanowski University of Kielce (Poland)
- 2015 Recomputing the early universe
  DAVID X International Workshop
  Scuola Normale Superiore of Pisa (Italy)
- 2017 Galaxy Formation Summer School
  Anargyrios and Korgialenios School of Spetses (Greece)

PhD at Scuola Normale Superiore

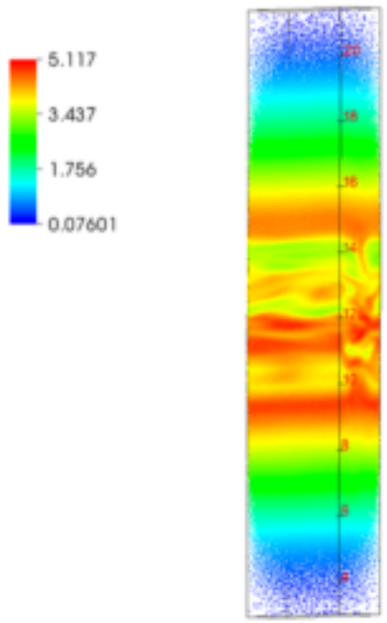
Current work:

Evaporation of molecular clouds

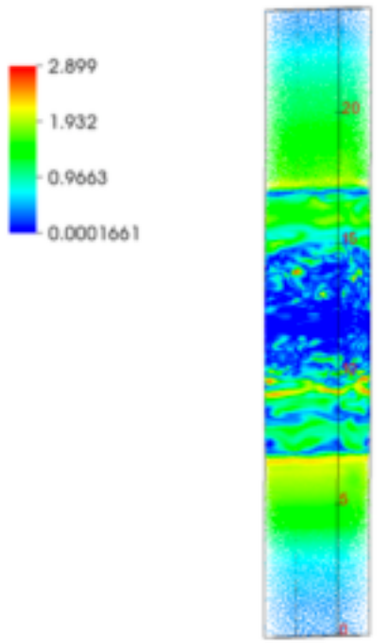
Evaporation of molecular clouds

Semi-analytical model

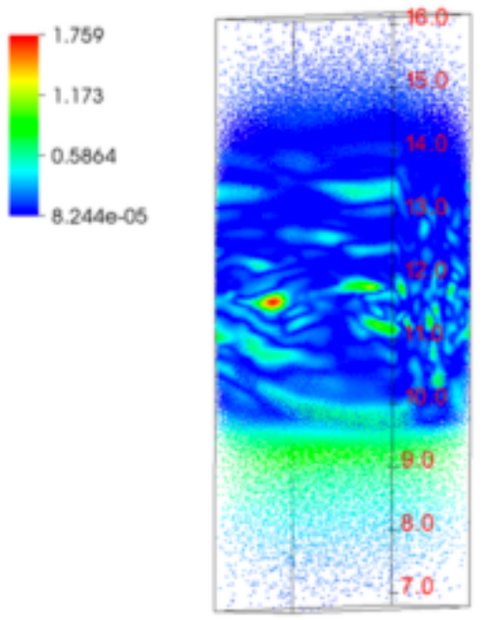
Simulations with RAMSES



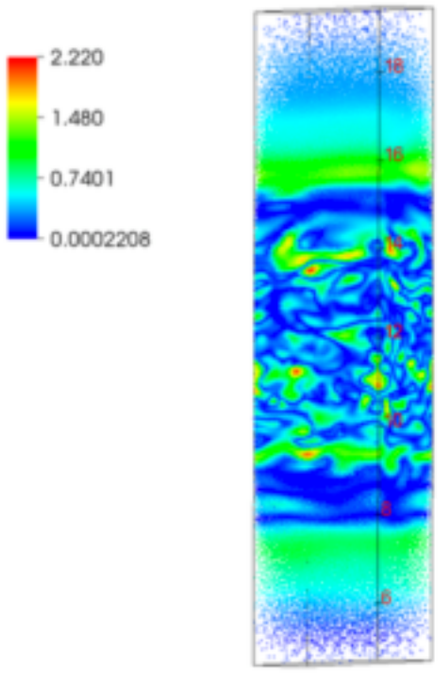
(a)SPH MHD, $100\Omega^{-1}$



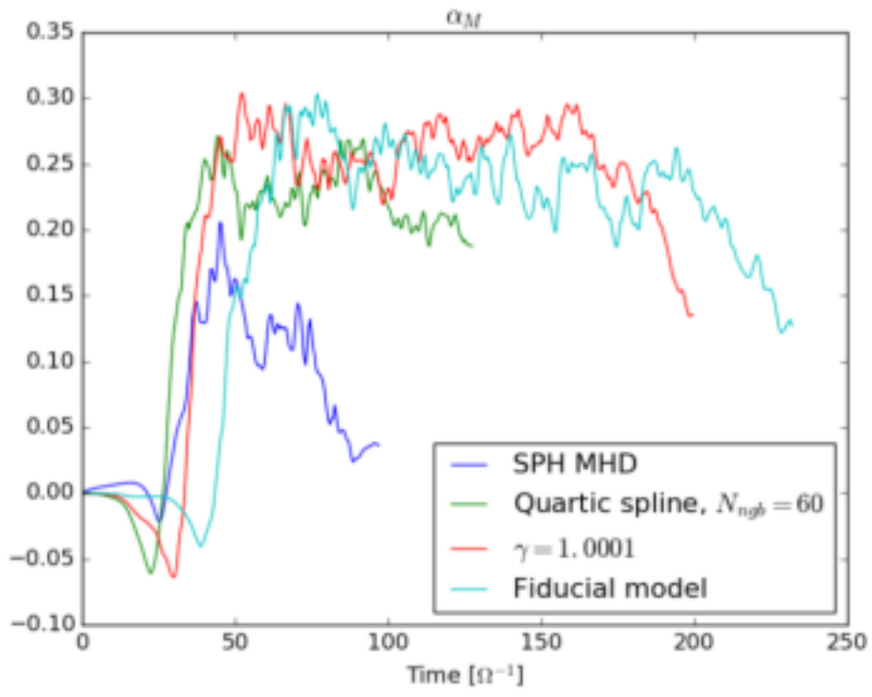
(b)Quartic spline, $128\Omega^{-1}$



(c)$\gamma = 1.0001, 200\Omega^{-1}$



(d)Fiducial model, $200\Omega^{-1}$



(e)Time evolution of α_M

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- Name: Kristian Ehlert
- Currently: M.Sc. (2nd yr)
- Advisor: Prof. Christoph Pfrommer
- Institution: University of Heidelberg
- Contact Info: kristian.ehlert@gmail.com

- Research Interests: jets, cosmic rays, clusters, cosmology
- Most relevant courses: Astro. Fluid Dyn., Gal. Extragal. Astro., Fundamentals of Simulational Methods
- Programming Languages: C, python
- Visualization Packages: Paraview
- Programming Experience: 2+ years

I would like to learn more about the theory and nummerics of astrophysical plasmas.

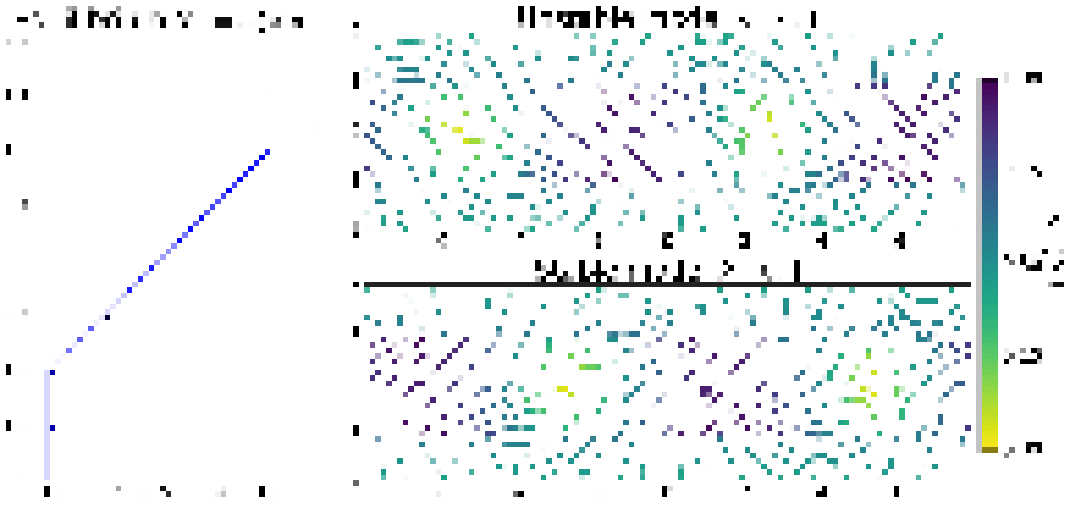
Adrian Fraser, University of Wisconsin-Madison

Current research: Effect of stable modes on shear-flow turbulence

Hydrodynamic shear flow:

- Stable modes excited nonlinearly, reach significant amplitude in saturation
- Strongly modifies flow and transport

⇒ Important in turbulence models

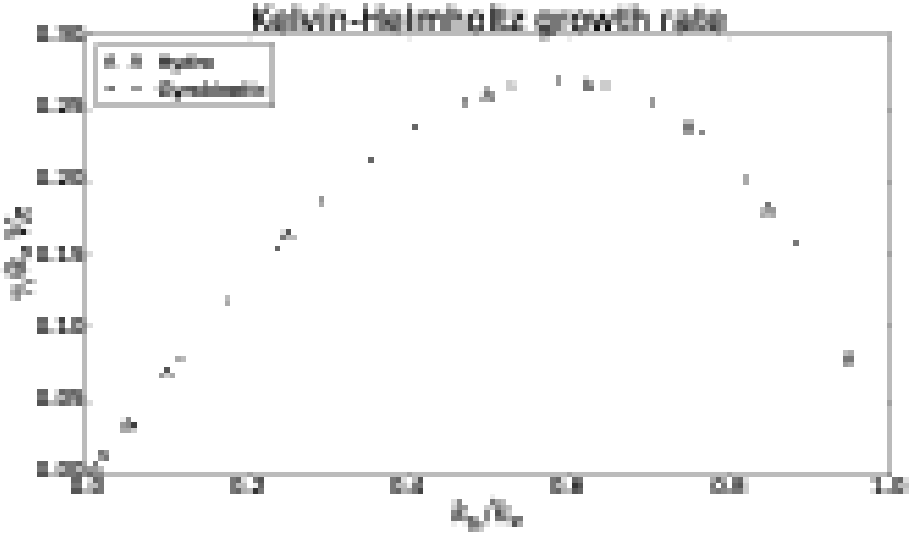


Fraser et al. **arXiv:1610.06142**

Gyrokinetic shear flow:

- Benchmark to hydro cases
- Numerical tools yield eigenmode characterization and saturation amplitude

→ Stable modes excited nonlinearly, reach significant amplitude

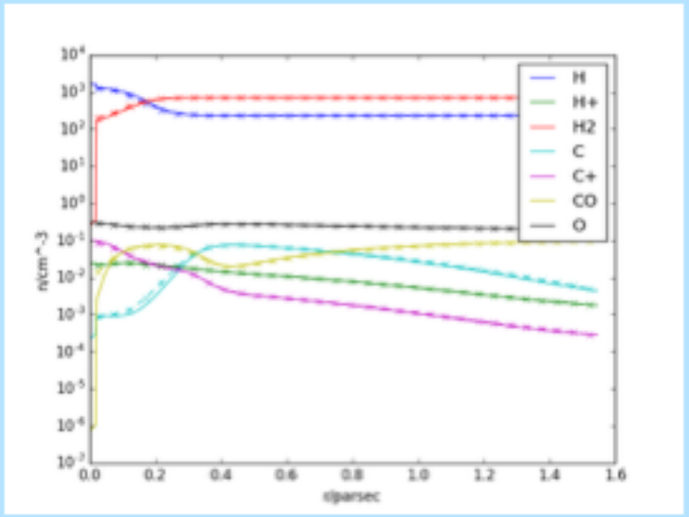


NBIA Summer School on Astrophysical Plasmas (2017)

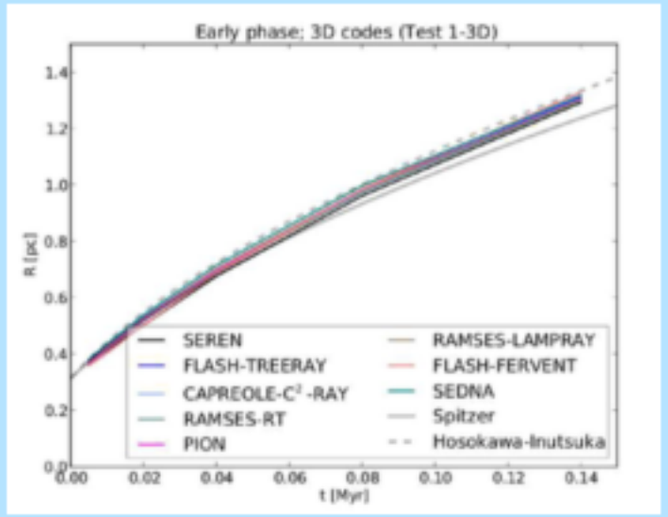
Troels Frostholm

NBI & STARPLAN, Copenhagen
Supervisor: Troels Haugbølle

Radiative transfer in RAMSES simulations



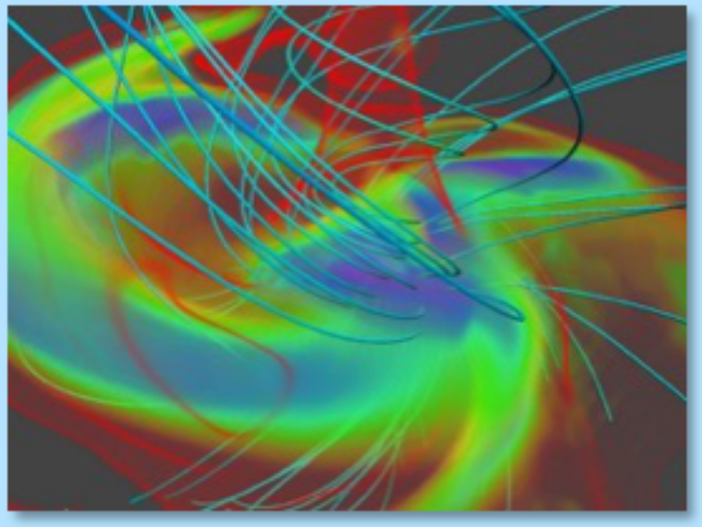
photodissociation region benchmark



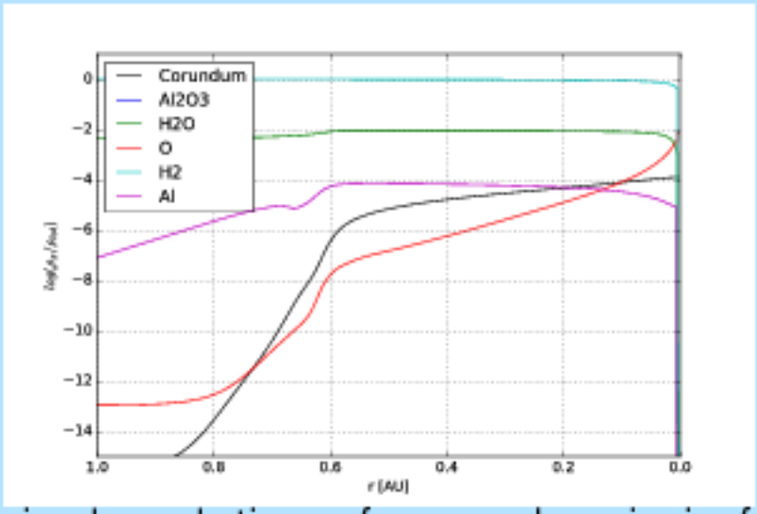
D-type expansion of ionization front

To be used in

Zoom-in simulations of star formation

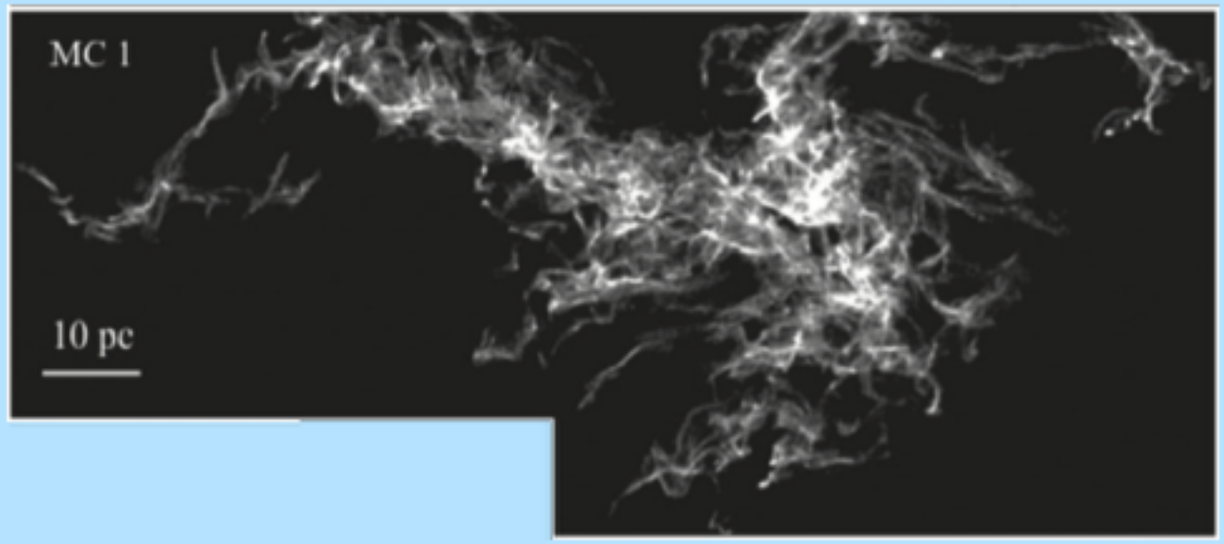


Formation of CAIs



Chemical evolution of corundum in in-falling gas during protostellar collapse phase

Simulations of GMC evolution



Carlos Gómez-Guijarro

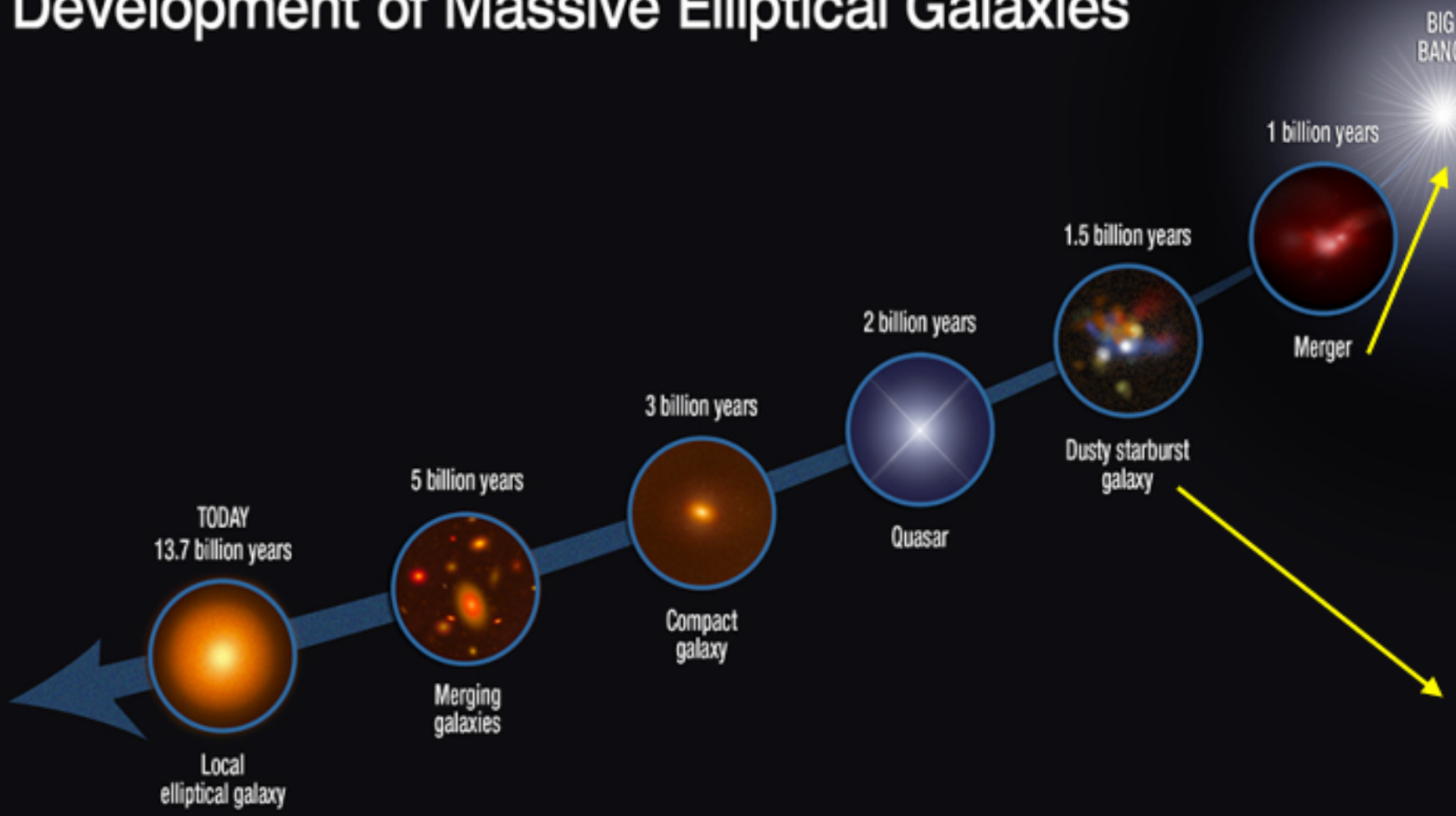
PhD Student (2nd year) - Dark Cosmology Centre, Niels Bohr Institute

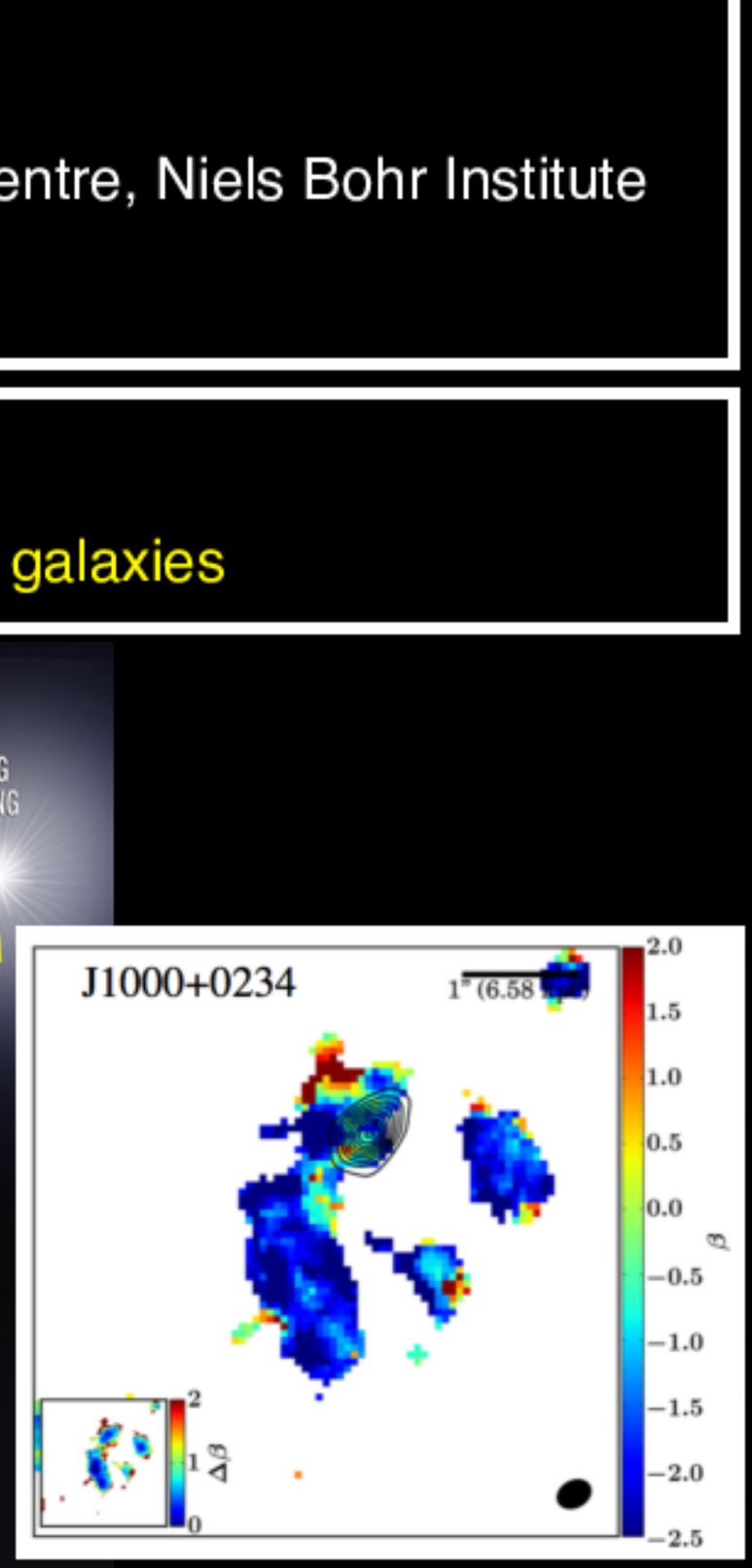
cgguijarro@dark-cosmology.dk

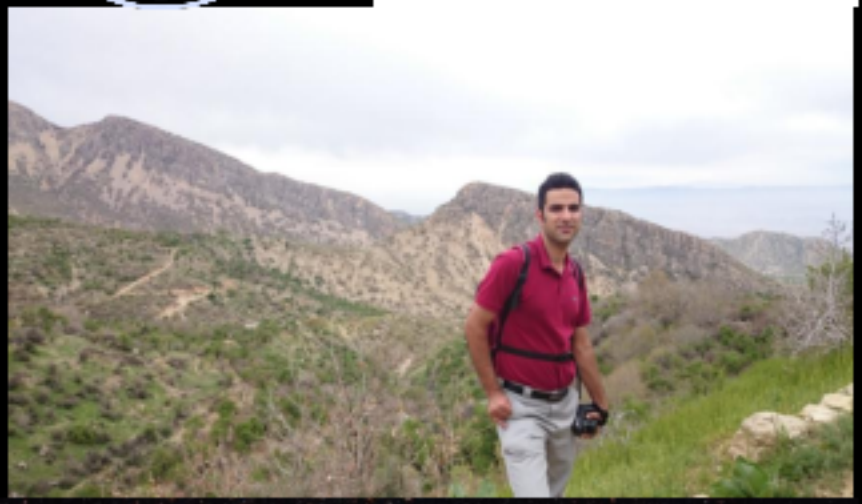
High-z starburst galaxies

Evolutionary connection with massive elliptical galaxies

Development of Massive Elliptical Galaxies







- First name: Seyed Azim (Azim)
- Last name: Hashemi
- Birthday: 1/4/1991
- Master Student at Sharif University of Technology, Tehran, IRAN.
- Research Assistant at IPM, Tehran, IRAN
- Major: Physics and Astrophysics.
- Research Interest : Astrophysics and Cosmology (Stellar evolution, Star Formation History(SFH), Dust Production , Exoplanet, Dwarf Galaxies).
- Email: hashemi.seyedazim@gmail.com

Francisco (Paco) Holguin

Graduate student in the Department of Astronomy
University of Michigan-Ann Arbor

Current research: Simulations of Cosmic Ray Driven Galactic Winds

Marija Jankovic

- PhD student at Imperial College London
- Modelling of protoplanetary disks:

  self-consistent pseudo-viscous accretion of disks with calculations of pseudo-viscosity from MHD conditions in the disk

  Can close-in Super Earths form in situ?

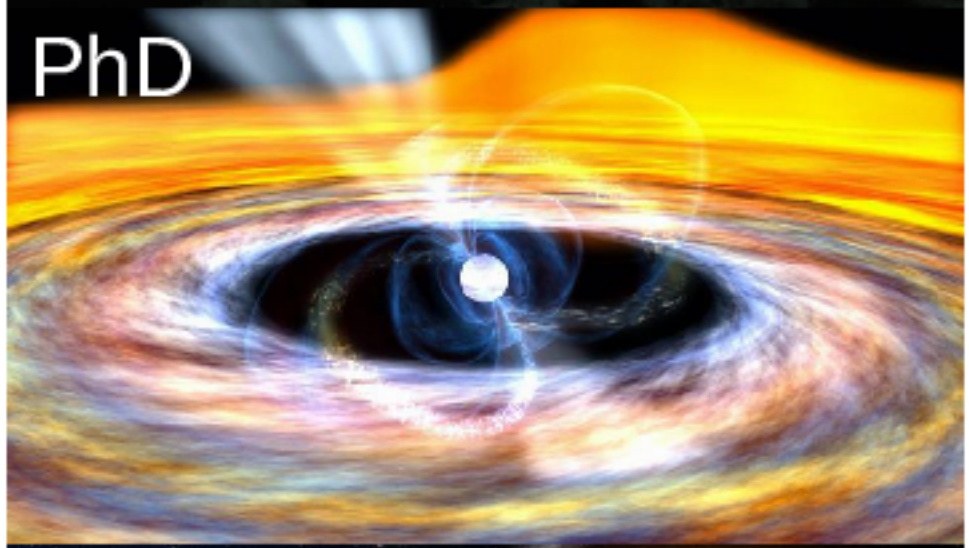
  simulated observations of massive disks

  What can we currently learn from marginally resolved disks?

- BSc, MSc in physics at University of Belgrade, Serbia

Jeff Jennings

Ludwig Maximilians
University Munich



Images courtesy:
University of Copenhagen/Lars Buchhave
NASA/Goddard Space Flight Center/Dana Berry
ESO/L. Calçada
NASA/JPL-Caltech

Star formation through dynamical accretion

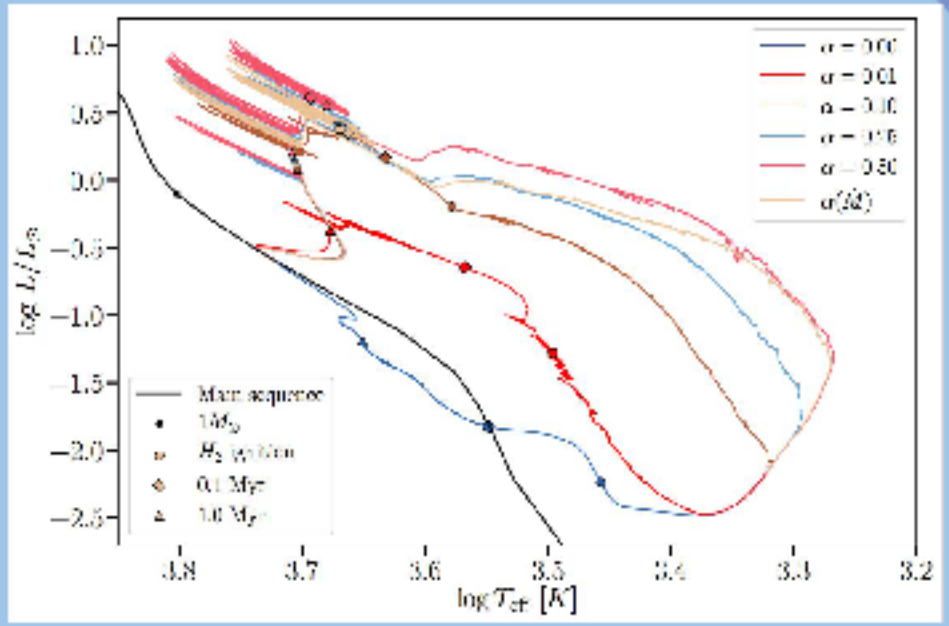
Master project
Sigurd Sigersen Jensen
University of Copenhagen

Methods:

- RAMSES accretion profiles
- MESA 1D stellar evolution code

Goals:

- Improve understanding of accreting models of star formation
- Improve stellar isochrones - solve luminosity spread problem?
- Implement MESA into RAMSES -> Irradiation feedback to protoplanetary disk etc



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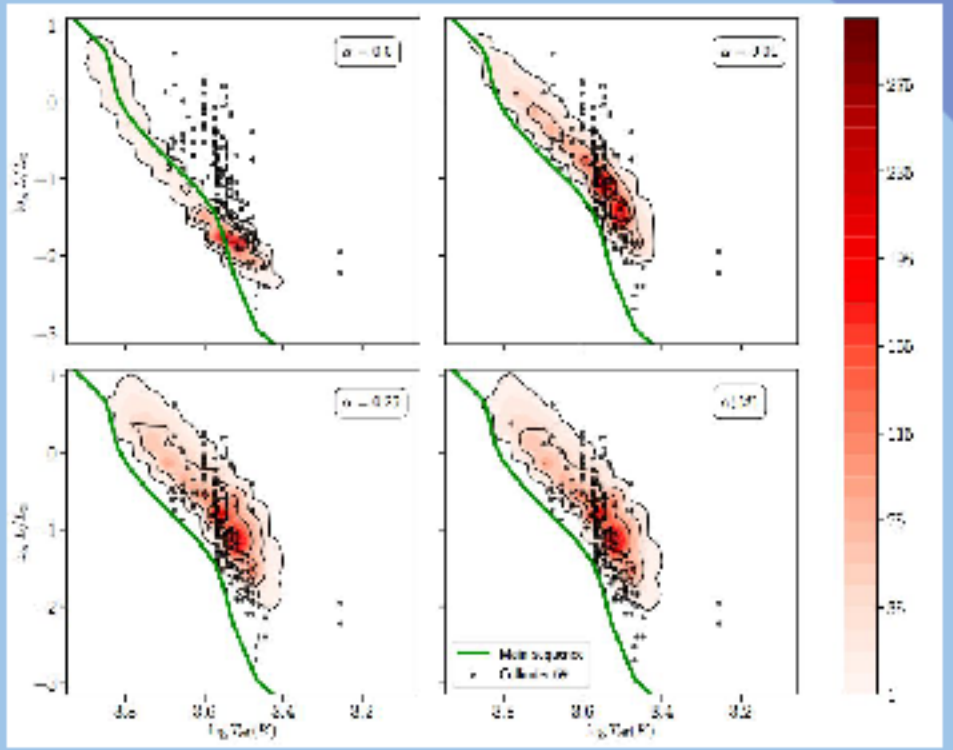
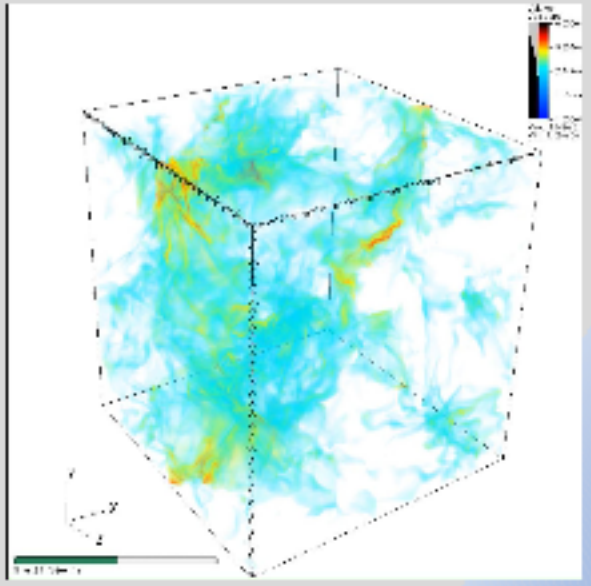
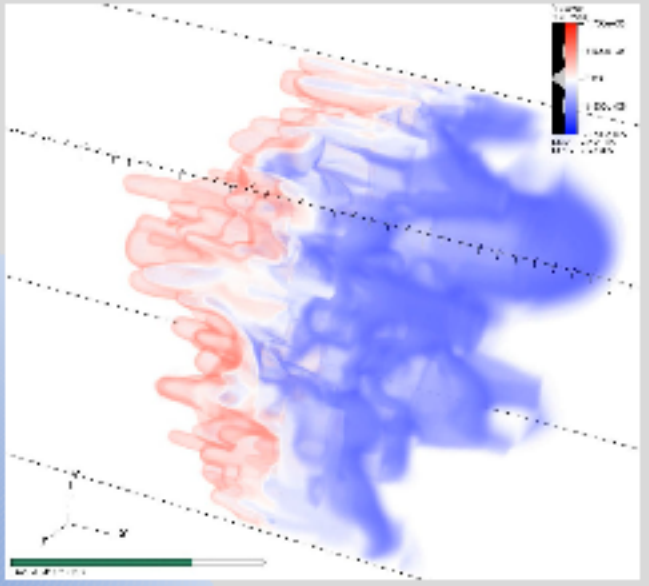


Resolution requirements for modelling molecular gas formation





Prabesh Raj Joshi

I. Physikalisches Institut,

Universität zu Köln

joshi@ph1.uni-koeln.de

Supervisor : Prof. Dr. Stefanie Walch

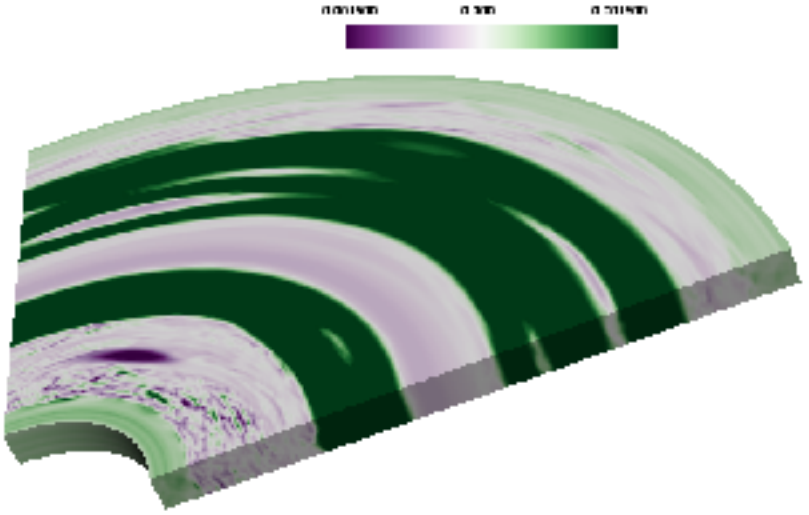
Niels Bohr Institutet

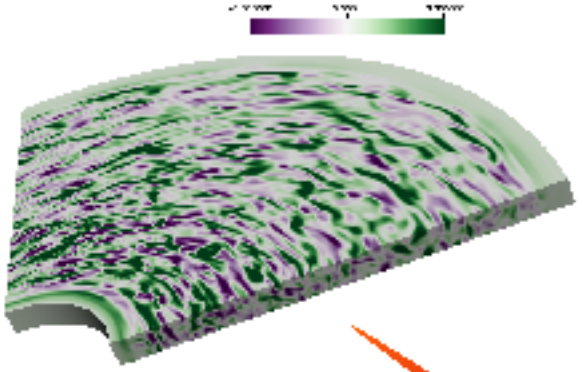
The Niels Bohr International Academy

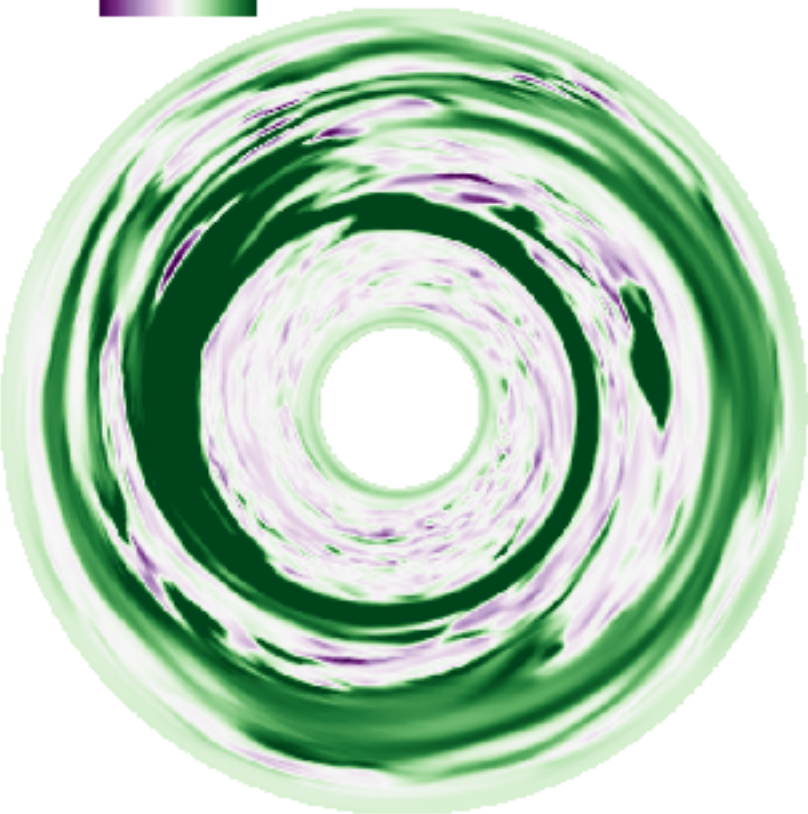
KRAPP LEONARDO

PhD Student.

HALL-MHD in protoplanetary disks.







NIRVANA code

NBIA Summer School on Astrophysical Plasmas

The Niels Bohr International Academy

28/08 to 01/09/2017

Michael Küffmeier
PhD student
Sup: Åke Nordlund & Troels Haugbølle
University of Copenhagen - NBI/StarPlan
kueffmeier@gmail.com

Research Interst: Star and Planet Formation

Phd: Sample of stars and protoplanetary disks forming in different environments in a Giant Molecular Cloud

I would like to learn more about:
Processes beyond Giant Molecular Cloud scales
Regimes non-suitable for magnetohydrodynamics

AHMAD LALTI

Second year masters student at the American university of Beirut.

My research work involves the study of secondary instabilities in rotating flows.

Specifically, we are exploring the effect of the third dimension (usually ignored) on the development of a non-axisymmetric secondary instability from an axisymmetric primary instability.

Introduction slide

NBIA summer school

Academic details

- Master student, Astrophysics and Astronomy, Observatory of Paris, France
- PhD at Ecole Normale Supérieure de Lyon, France, starting in september

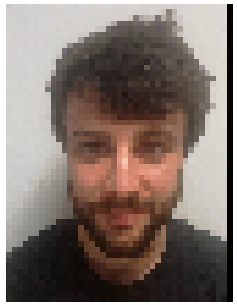
Master thesis & PhD topic

"Star formation : study of the interstellar dust dynamics"

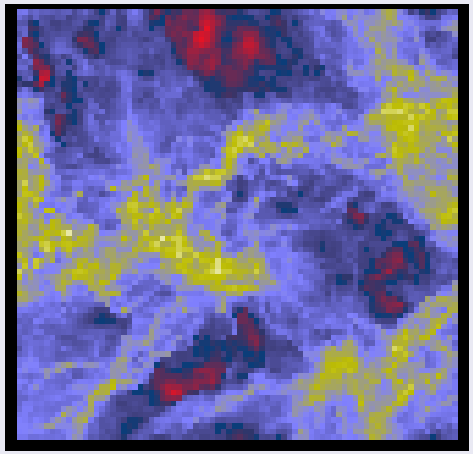
Personnal information

Ugo Lebreuilly
E-mail :
ugo.lebreuilly@ens-lyon.fr

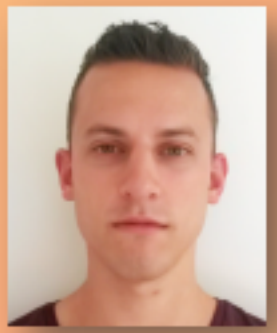
Phone : +33 669 440 023



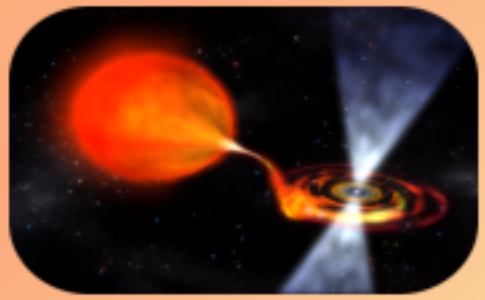
Molecular cloud, RAMSES simulation (OBSPM database)



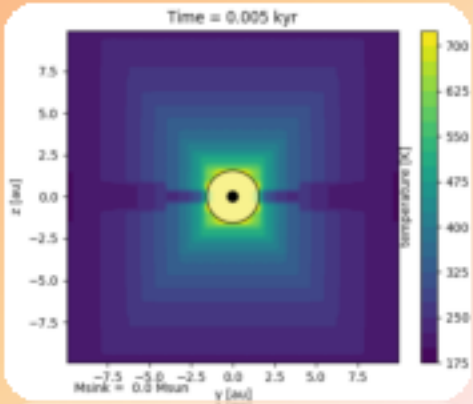
NBIA Intro slide
Raphaël Mignon-Risse



- M.Sc. Student, Astrophysics & Astronomy
  University Paris-Diderot (France)
  → Ph.D. Student, CEA Saclay (France), starting in 10/2017



- Former internships :
  Accretion disks in LMXBs & stability
  → Hydrodynamics, microphysics
- Last internship topic:
  Effect of radiative transfer in massive stars formation
  → Important feedback
- Ph.D. topic:
  Study of massive stars formation
  via numerical simulations
  → Computational astrophysics, dust environment



université PARIS DIDEROT

Contact: raphael.mignon-risse@cea.fr

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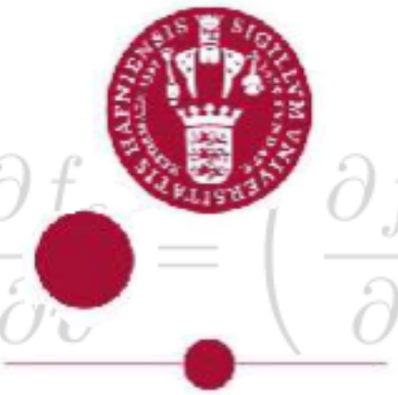


UNIVERSITY OF COPENHAGEN

Gopakumar Mohandas

PhD Student

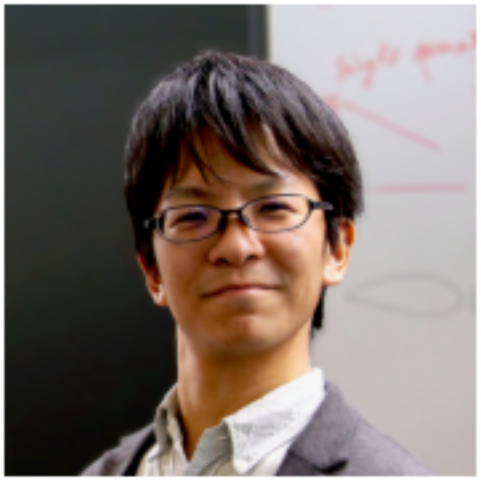
Supervisor: Dr. Martin Pessah

Research Interests:

- Astrophysical Fluid Dynamics & Plasma Physics
- Accretion Disk Physics
- Stability of differentially rotating plasmas

Self-Introduction

- Shoji Mori
- Tokyo Institute of Technology (Japan)
- Research Interest: Planet formation, Protoplanetary disks, MHD, MRI
- Method: MHD simulation
- Like: Beer, Soccer, Snowboarding
- Paper: "Electron Heating in the MRI : Implications for Turbulence Strength in Outer Regions of PPDs"



me

beer

Website: http://www.geo.titech.ac.jp/lab/ida/mori/

NBIA Summer School on Computational Astrophysics

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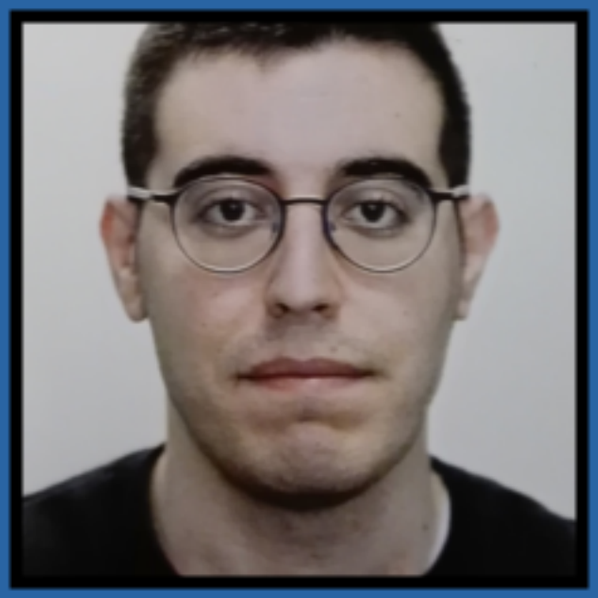
August 28 - September 1, 2017, Copenhagen

- Name: Matteo Pais
- Currently: PhD (2nd yr)
- Advisor: Prof. Christoph Pfrommer
- Institution: University of, Institute, Country
- Role in School: Student
- Contact Info: matteo.Pais@h-its.org



- Research Interests: Galaxy Formation, Galactic dynamos
- Most relevant courses: Fluid Dynamics, Computational Physics, Theoretical astrophysics, General Relativity.
- Programming Languages: Python, C, Mathematica
- Visualization Packages: Paraview
- Programming Experience: 1 year

I would like to learn more about Plasma physics applied to astrophysics and consolidate my knowledge in this field.

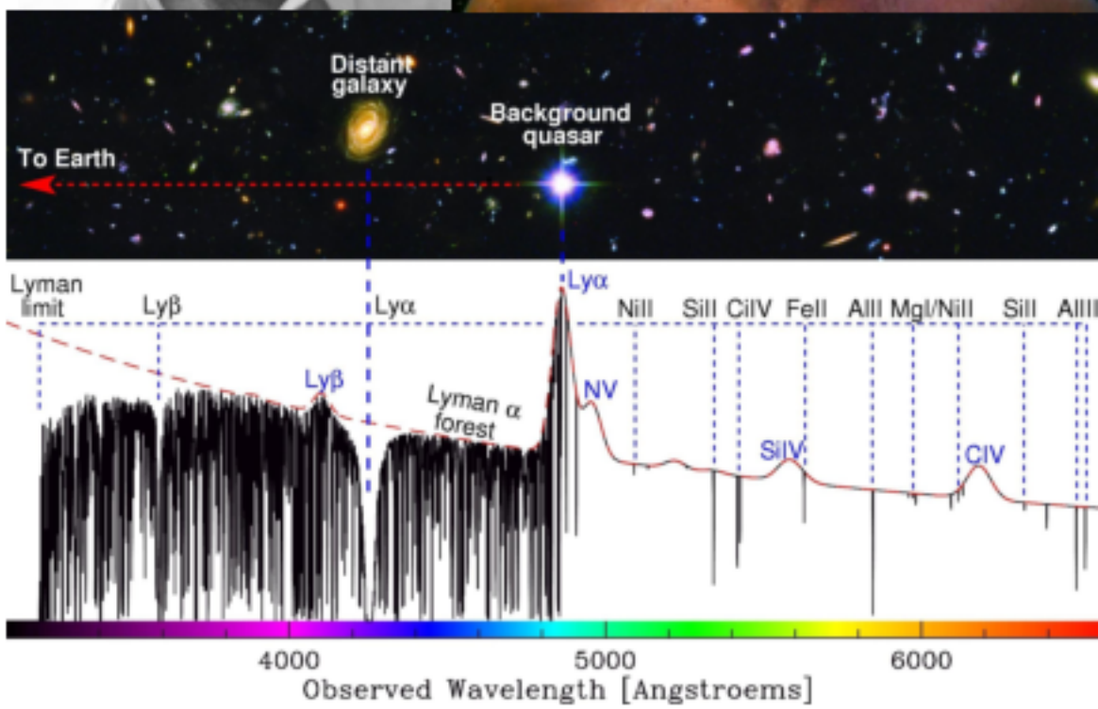
Henrik Rhodin

Personal

- Born in Sweden, lived in France, studied in Switzerland
- Astrophysics in Edinburgh, Lund, Copenhagen
- Ph.D at Dark Cosmology Centre under supervision of Lise Christensen

Work

- Observational aspects of galaxy evolution
- Understanding the connection between absorbers and their galaxy counterparts
- How are metals dispersed to large distances? - there must be a direct connection to large scale flows of gas



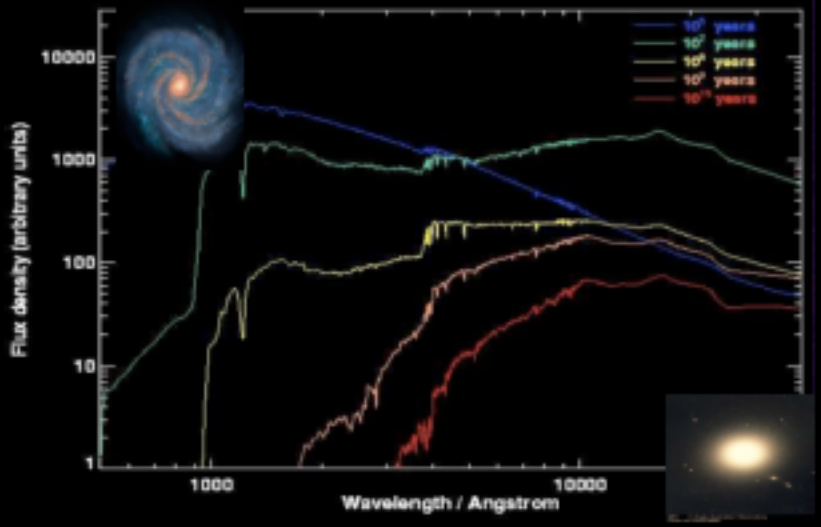
Miscellaneous

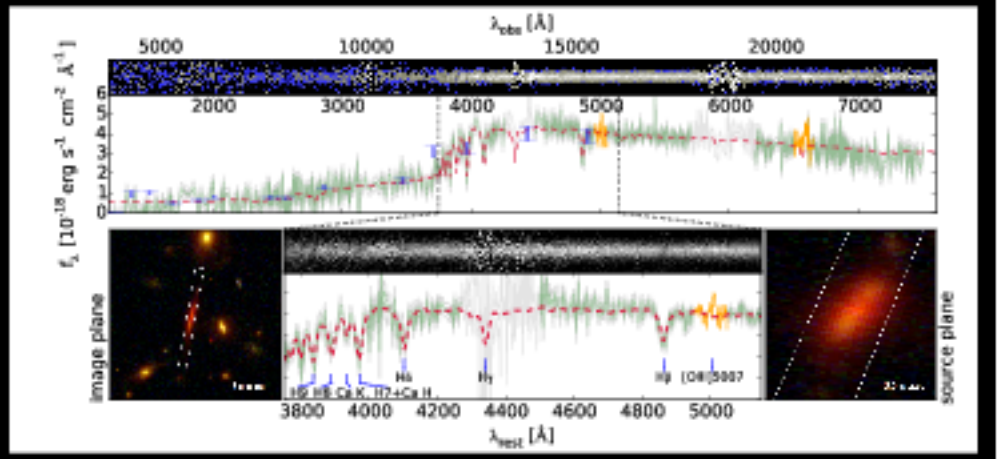
- Enjoy long discussions, good food and company (see *Kräftskiva*)
- Philosophy on the side
- Hate bicycles (and cycling)

The extreme life of massive galaxies:

Live Fast, Die young

Dead old Galaxies





Extreme compactness

Mikkel Stockmann
PhD Student
Dark Cosmology Centre

TOMAS TAMFAL

PHD STUDENT

UNIVERSITY ZÜRICH

CENTER FOR THEORETICAL ASTROPHYSICS AND COSMOLOGY

University of Zurich[UZH]

PERSONAL

- BORN IN OPAVA (CZ)
- LIVED IN OPAVA, BAD TÖLZ (GER), MANNHEIM (GER) AND NOW IN ZÜRICH (CH)

EDUCATION

- STUDIED PHYSICS AT THE ETH IN ZÜRICH
- STARTED MY PHD IN DECEMBER 2016

RESEARCH INTERESTS

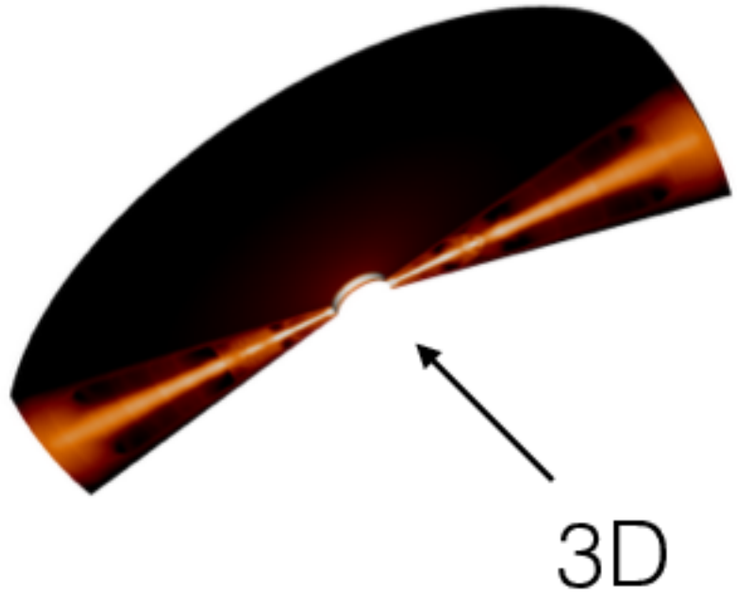
- DUST COAGULATION IN PROTOPLANETARY DISKS
- BLACK HOLES IN DWARF GALAXIES

HOBBIES

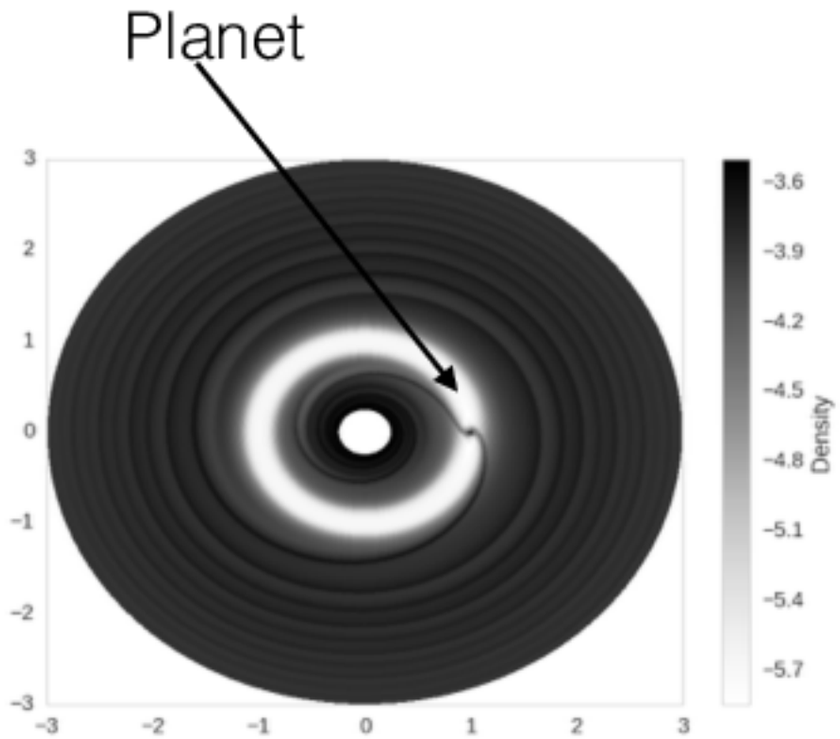
- SPORT, BOOKS, TRAVEL

The Niels Bohr International Academy

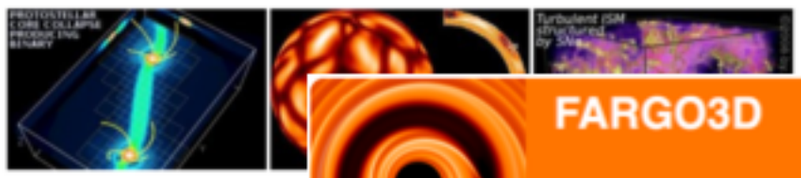
Philipp Weber
PhD Student
NBIA Copenhagen



Dust in Protoplanetary Disks



NIRVANA code



FARGO3D

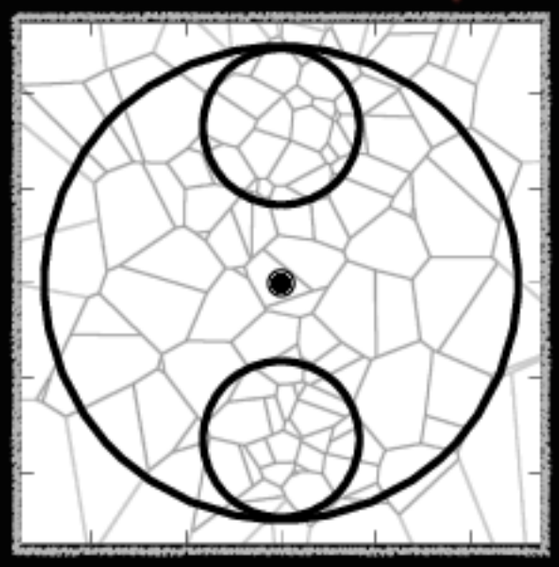
A versatile HD/MHD code that runs on clusters of CPUs or GPUs, with special emphasis on protoplanetary disks.

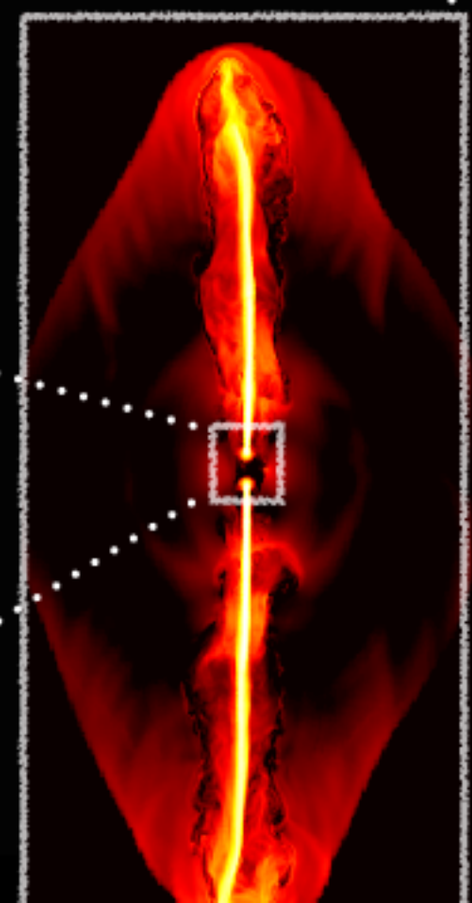
Heidelberg Institute for Theoretical Studies

HITS

Rainer Weinberger

- Cosmological simulations of galaxy formation
- Simulating jets from supermassive black holes
- Finite volume MHD simulations with the Arepo code





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NBIA Summer School on Astrophysical Plasmas

The Niels Bohr International Academy

August 28 to September 1, 2017, Copenhagen

- Name: Georg Winner
- Currently: PhD (1st yr)
- Advisor: Prof. Christoph Pfrommer
- Institution: Heidelberg Institute for Theoretical Studies
- Role in School: Student
- Contact Info: georg.winner@h-its.org

- Research Interests: Cosmic Rays, Galaxies, Cosmology
- Most relevant courses: Plasma and Cosmic Ray Physics, Physics of Galaxy Clusters, Fundamentals of Simulation Methods
- Programming Languages: C/C++, Python
- Programming Experience: 2 years

I would like to learn more about plasma physics and numerical codes