

Vorlesungsverzeichnis

Master of Science Astrophysik

Winter 2024/25

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Master of Science Astrophysik**AstroClub**

Arbeitsgemeinschaft
Mo, 14-taglich, 18:30 - 19:30, Horsaal Astronomie

Veranst. SWS:
ECTS:
Hyperlink:
Max. Teilnehmer:

Maths for TA and Cosmology

Cristiano Porciani
Arbeitsgemeinschaft
Fr, woch, 10:00 - 12:00, Raum 0.008

Veranst. SWS:
ECTS:
Hyperlink:
Max. Teilnehmer:

astro608: Theoretical Astrophysics

Cristiano Porciani
Vorlesung
Mi, woch, 12:00 - 13:00, Horsaal Astronomie
Do, woch, 11:00 - 13:00, Horsaal Astronomie

Veranst. SWS:
ECTS:
Hyperlink:
Max. Teilnehmer:

astro608 exercise: Theoretical Astrophysics

Cristiano Porciani
ubung
Mo, woch, 11:00 - 13:00, Raum 0.008
Mi, woch, 16:00 - 18:00, Raum 0.008
Do, woch, 16:30 - 18:30, Horsaal Astronomie
Fr, woch, 15:30 - 17:30, Raum 0.008

Veranst. SWS:
ECTS:
Hyperlink:
Max. Teilnehmer:

astro811: Stellar Structure and Evolution

Norbert Langer
Vorlesung
Do, Einzel, 09:00 - 11:00, Horsaal Astronomie, 30.01.2025 - 30.01.2025

Veranst. SWS: 3.0
ECTS:
Hyperlink:
Max. Teilnehmer:

astro812: Cosmology

Peter Schneider, Thomas Erben
Vorlesung

Veranst. SWS: 3.0
ECTS:

Di, wöch, 10:00 - 13:15, Hörsaal Astronomie

Hyperlink:
Max. Teilnehmer:

astro812 exercise : Cosmology

Peter Schneider, Thomas Erben

Übung

Mo, wöch, 10:00 - 12:00, Raum 0.006

Mo, wöch, 13:30 - 15:00, Raum 0.006

Mi, wöch, 10:00 - 12:00, Raum 0.005

Veranst. SWS: 2.0

ECTS:

Hyperlink:

Max. Teilnehmer:

astro8402: X-ray astronomy

Thomas Holger Reiprich

Vorlesung

Mo, wöch, 10:00 - 12:00, Hörsaal Astronomie

Veranst. SWS: 2.0

ECTS:

Hyperlink:

Max. Teilnehmer:

Exercises astro8402: "X-ray astronomy"

Thomas Holger Reiprich

Übung

Mi, wöch, 16:00 - 18:00, Cip-Pool Astronomie

Veranst. SWS: 1.0

ECTS:

Hyperlink:

Max. Teilnehmer:

astro841: Radio Astronomy: Tools, Applications, and Impacts

Frank Bigiel, Stefanie Mühle

Vorlesung

Di, wöch, 14:00 - 15:30, Hörsaal Astronomie

Do, wöch, 15:15 - 16:30, Hörsaal Astronomie

Veranst. SWS:

ECTS:

Hyperlink:

Max. Teilnehmer:

astro841 exercise: Radio Astronomy: Tools, Applications, and Impacts

Frank Bertoldi, Stefanie Mühle

Übung

Di, wöch, 15:45 - 17:15, Raum 0.006

Di, wöch, 15:45 - 17:15, Hörsaal Astronomie

Veranst. SWS:

ECTS:

Hyperlink:

Max. Teilnehmer:

astro8503: Radio and X-ray Observations of Dark Matter and Dark Energy

Florian Pacaud

Veranst. SWS: 2.0

Vorlesung
Fr, wöch, 13:00 - 15:00, Hörsaal Astronomie

ECTS:
Hyperlink:
Max. Teilnehmer:

astro8503 exercise: Radio and X-ray Observations of Dark Matter and Dark Energy

Florian Pacaud
Übung
Fr, wöch, 15:00 - 16:30, Hörsaal Astronomie

Veranst. SWS:
ECTS:
Hyperlink:
Max. Teilnehmer:

astro8506: Statistical methods for astrophysics and cosmology

Andrina Nicola
Vorlesung
Mi, wöch, 10:00 - 12:00, Hörsaal Astronomie

Veranst. SWS:
ECTS:
Hyperlink:
Max. Teilnehmer:

astro8506 exercise: Statistical methods for astrophysics and cosmology

Andrina Nicola
Übung
Do, wöch, 13:00 - 15:00, Hörsaal Astronomie

Veranst. SWS:
ECTS:
Hyperlink:
Max. Teilnehmer:

astro8505: Introduction to MoND

Jan Pflamm-Altenburg
Vorlesung
Fr, wöch, 10:00 - 12:00, Hörsaal Astronomie

Veranst. SWS:
ECTS:
Hyperlink:
Max. Teilnehmer:

astro8505 exercise: Introduction to MoND

Jan Pflamm-Altenburg
Übung
Do, wöch, 08:00 - 09:00, Raum 0.005

Veranst. SWS:
ECTS:
Hyperlink:
Max. Teilnehmer:

astro8531: The Physics of Dense Stellar Systems

Pavel Kroupa
Vorlesung
Mo, wöch, 15:30 - 18:30, Hörsaal Astronomie

Veranst. SWS: 3.0
ECTS:
Hyperlink:

Max. Teilnehmer:

Literatur:

- Galactic Dynamics* by J. Binney and S. Tremaine (1987, Princeton University Press)
- Dynamics and Evolution of Galactic Nuclei* by D. Merritt (2013, Princeton University Press)
- Dynamics and Evolution of Globular Clusters* by Lyman Spitzer, Jr. (1987, Princeton University Press)
- The Gravitational Million-Body Problem* by Douglas Heggie and Piet Hut (2003, Cambridge University Press)
- Gravitational N-body Simulations: Tools and Algorithms* by Sverre Aarseth (2003, Cambridge University Press)
- [Initial Conditions for Star Clusters](http://adsabs.harvard.edu/abs/2008LNP...760..181K) by Pavel Kroupa (2008, Lecture Notes in Physics, Springer)
- [The stellar and sub-stellar IMF of simple and composite populations](http://adsabs.harvard.edu/abs/2013pss5.book..115K) by Pavel Kroupa (2013, Stars and Stellar Systems Vol.5, Springer)
- [The universality hypothesis: binary and stellar populations in star clusters and galaxies](http://adsabs.harvard.edu/abs/2011IAUS..270..141K) by Pavel Kroupa (2011, IAUS 270, p.141)

Kommentar:

The vast majority of stars form in less than one pc sized groups or clusters containing from a dozen to millions of binary stars and which are far denser than galactic fields. Knowledge of the distribution and properties of, and of the dynamical processes within, these dense stellar systems is therefore important for understanding the properties and kinematics of stellar populations in and around galaxies.

This course gives an outline of the birth and dynamical evolution of star clusters, and of the dynamical processes acting within these dense stellar systems. The content of this course encompasses energy equipartition, stellar evolution, dissociation of binary systems and the acceleration of stars to high kinetic energies. Knowledge of these issues is useful for the understanding of star formation because most of the observed stars in galactic fields have been dynamically processed in their birth dynamical structures. It is also useful for understanding the kinematical and dynamical properties of galactic field stellar populations which differ in different galaxies. The integrated galactic initial mass function (IGIMF) and other integrated galactic field problems are taught.

Check <https://astro.uni-bonn.de/~pavel/lectures.html#lect1> for more details.

astro8531 exercise: The Physics of Dense Stellar Systems

Pavel Kroupa

Übung

Mo, wöch, 12:00 - 14:00, Raum 0.005

Mi, wöch, 10:00 - 12:00, Raum 0.008

wöch

Veranst. SWS:

ECTS:

Hyperlink:

Max. Teilnehmer:

Scalable Machine Learning Methods for Astrophysical Surveys

Alexander Rüttgers

Arbeitsgemeinschaft

Di, wöch, 16:00 - 18:00, Cip-Pool Astronomie

Veranst. SWS:

ECTS:

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Max. Teilnehmer:

Seminare und Praktika

astro830: Astrophysics

Frank Bertoldi, Frank Bigiel, Jürgen Kerp, Michael Kramer, Pavel Kroupa, Karl Menten, Andrina Nicola, Cristiano Porciani, Thomas Holger Reiprich
Seminar
Mo, wöch, 14:00 - 15:30, Hörsaal Astronomie

Veranst. SWS: 2.0

ECTS:

Hyperlink:

Max. Teilnehmer:

astro831: Research Project

Frank Bertoldi, Frank Bigiel, Jürgen Kerp, Michael Kramer, Pavel Kroupa, Norbert Langer, Karl Menten, Andrina Nicola, Cristiano Porciani, Thomas Holger Reiprich, Peter Schneider
Praktikum
wöch

Veranst. SWS:

ECTS:

Hyperlink:

Max. Teilnehmer:

6952: Seminar on theoretical dynamics

Pavel Kroupa
Seminar
Fr, wöch, 14:00 - 16:00, Raum 0.005

Veranst. SWS: 2.0

ECTS:

Hyperlink:

Max. Teilnehmer:

6953: Seminar on stellar evolution and hydrodynamics

Norbert Langer, Abel Schootemeijer
Seminar
Do, wöch, 13:30 - 15:00, Raum 0.008

Veranst. SWS: 2.0

ECTS:

Hyperlink:

Max. Teilnehmer:

6954: Seminar on galaxy clusters

Thomas Holger Reiprich
Seminar
Do, wöch, 15:00 - 16:30, Raum 0.006

Veranst. SWS: 2.0

ECTS:

Hyperlink:

Max. Teilnehmer:

6955: Seminar on selected problems in extragalactic astronomy and cosmology

Cristiano Porciani, Peter Schneider
Seminar
Do, wöch, 16:00 - 18:00, Raum 0.008

Veranst. SWS: 2.0

ECTS:

Hyperlink:

Max. Teilnehmer:

6958: Astronomisches Kolloquium

Vortrag
Fr, wöch, 11:00 - 12:00, Raum 0.02 MPIfR

Veranst. SWS: 2.0
ECTS:
Hyperlink:
Max. Teilnehmer:

6959: Seminar on cosmology

Cristiano Porciani, Thomas Holger Reiprich, Peter Schneider
Seminar
Di, wöch, 14:00 - 16:00, Raum 0.008

Veranst. SWS: 2.0
ECTS:
Hyperlink:
Max. Teilnehmer:

6960: Seminar on radio astronomy

Frank Bertoldi, Frank Bigiel, Jürgen Kerp, Michael Kramer, Karl Menten
Seminar
Do, wöch, 19:00 - 20:00, Hörsaal Astronomie

Veranst. SWS: 2.0
ECTS:
Hyperlink:
Max. Teilnehmer:

6961: Seminar on stars, stellar systems, and galaxies

Pavel Kroupa
Seminar
Di, wöch, 16:00 - 17:30, Raum 0.008

Veranst. SWS: 2.0
ECTS:
Hyperlink:
Max. Teilnehmer:

6965: Anleitung zur selbständigen wissenschaftlichen Arbeit

Frank Bertoldi, Frank Bigiel, Jürgen Kerp, Michael Kramer, Pavel Kroupa, Norbert Langer, Karl Menten, Andrina Nicola, Cristiano Porciani, Thomas Holger Reiprich
Praktikum
n.A.

Veranst. SWS:
ECTS:
Hyperlink:
Max. Teilnehmer:

6970 6970: Seminar on Interstellar Medium and Star Formation

Frank Bigiel

Veranst. SWS: 2.0

Seminar
Do, wöch, 11:00 - 13:00, Raum 0.006

ECTS:
Hyperlink:
Max. Teilnehmer:

6971 6971: Machine learning journal club

Thomas Holger Reiprich
Arbeitsgemeinschaft
Di, 14-täglich, 15:00 - 16:00, Raum 0.005, ab 08.10.2024

Veranst. SWS:
ECTS:
Hyperlink:
Max. Teilnehmer: