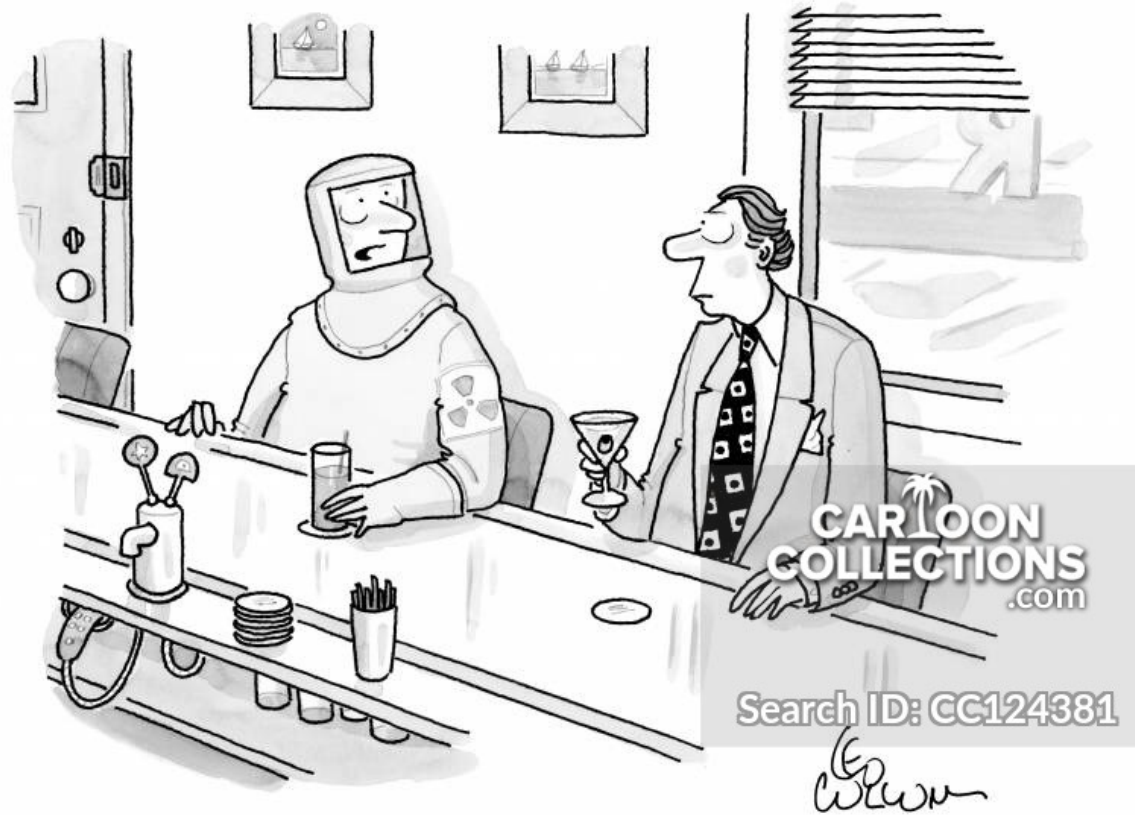


Radiative Processes

Alexander Knebe, *Universidad Autonoma de Madrid*



"Ever have the feeling you forgot to turn something off?"



- Prof. Alexander Knebe, C-8-316, alexander.knebe@uam.es



- Prof. Benjamin Montesinos (CAB)



- Dr. Marcelino Agundez (CAB)

- Fundamentals of Radiate Transfer
- Thermal Radiation
- Radiative Transitions & Scattering
- Radiative Processes in Cosmology & Galaxy Formation
- Molecules in Space (*Marcelino Agundez*)
- *hands-on sessions*
 - SED modelling (*Benjamin Montesinos*)

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Astronomy Picture of the Day Microsoft Office Home My account Alexander Knebe

Alexander Knebe

a northern soul

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BSc

- Computational Physics I: MATLAB
- Astronomy & Astrophysics I

MSc

- Cosmology & The Early Universe
- Computational Astrophysics
- Gravitational Lensing
- **Radiative Processes in Cosmology and Galaxy Formation**
- Computational Cosmology

the official site of the MSc in Astrophysics @ UAM

Misc. Lectures

- Life, the Universe and Everything
- Das Universum: Anfang vom Ende?
- Galaxienhaufen

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Radiative Processes

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Release of the Cosmic Microwave Background

Neutral Universe First stars Epoch of reionisation

This MSc course teaches you the basic concepts of radiative processes. There are further applications to astrophysical phenomena on all possible scales ranging from stellar atmospheres over galaxies and galaxy clusters to the first objects on the Universe.



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- Fundamentals of radiative transfer
- Thermal Radiation
- Radiative Transitions
- Scattering Processes
- Stellar Atmospheres
- Non-thermal radiative processes
- Ionised Gas
- Galaxy Formation and Cosmology:
 - Motivation
 - Galaxy Formation
 - Galaxy Clusters
 - 21-cm Cosmology
 - The Intergalactic Medium
- Molecular Spectroscopy and Excitation

recorded classes:

- Galaxy Formation (pt.2) + Galaxy Cluster (pt.1)
- Galaxy Clusters (pt.2) + 21cm Cosmology (pt.1)
- 21cm Cosmology (pt.2) + IGM
- Molecules - Spectroscopy
- Molecules - Excitation

} course material

Please check the actual class schedule for 2022/23.



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Please check the actual **class schedule for 2022/23.** class schedule

Radiative Processes

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"32554 - Radiative Processes in Astrophysics" 2024/25

day	date	time	teacher	topic	comments
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Thu	26/09/2024	12-14	Alexander	Scattering + Radiation Fields	
Fri	27/09/2024	12-14	Alexander	Galaxy Formation + Galaxy Clusters	
Thu	03/10/2024	12-14	Alexander	<i>exercise discussion #1</i>	submission of 1st solutions set: Monday, 30/09/2024
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Thu	07/11/2024	12-14	Alexander	<i>exercise discussion #2</i>	submission of 2nd solutions set: Monday, 04/11/2024
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A) continuous evaluation

You have to hand in solutions to the following two sets of exercises

- [exercises1.pdf](#)
- [exercises2.pdf](#)

Please check the actual class schedule for the submission days. This part of the evaluation counts 40%.

B) final exam

At the end of the course (i.e. on the day of the scheduled exam) you will have to give a presentation (max. 15min) where you either **review a scientific article** or present results from some **hands-on project**.

You can find more information in our [proposed list](#). But you certainly can also propose your favourite article and/or project, but that then requires approval from one of the teachers (and hence please synchronize early). This part of the evaluation counts 60%.

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- 40% continuous evaluation
 - 2 exercises classes

- 60% final presentation:
 - review a scientific article *or* do a hands-on project
 - give a (max. 15min.) presentation at the 'exam day'.

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Books

"Radiative Processes in Astrophysics", George B. Rybicki & Alan P. Lightman

UAM

The official "Guia Docente" (course syllabus) can be found [here](#).

