

**STELLAR STRUCTURE
AND EVOLUTION
2018**

Yamila Miguel

TAs: *Stella Reino and Fraser Evans*

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LOGISTICS

Lectures: Room HL414

(except November 2nd, that we have the computer lab, room to be confirmed)

Stella: office 560 Oort building. Hours: Tuesday 11:00 - 12:00 and Thursday 13:00 - 14:00

Fraser: office 537, OB. Hours: Monday 14:30 - 15:30 and Wed 10:30-11:30

My office is the 540, OB (only on appointment after being to TA)



ASSIGNMENT

Numerically simulate and study the entire evolution of a star of a given mass using the code MESA

Write a comprehensive but concise report

Stella and Fraser will be helping you to understand the code and code set-up in a Computer Lab class on November 2nd

Deadline to give the report to the TA: November 16th (12:00)

They will be graded by November 30th

If failing, you will get a second chance, to prepare a new report until December 10th

(30% of the final grade)

FINAL EXAMINATION

ADMISSION UPON SUCCESSFUL ASSIGNMENT

Written exam (70% of the final grade) - January 18th 2019

A sheet of relevant formulae will be given

STUDY MATERIAL

Website of the course: <https://home.strw.leidenuniv.nl/~ymiguel/>

Lecture notes of Prof. Onno Pols

"Stellar interiors", by Hansen, Kawaler & Trimble

"Stellar Structure and Evolution", by Kippenhahn, Weigert & Weiss, 2nd edition

Highly recommend to do the exercises at the end of each chapter of Prof. Onno Pols's notes if you want to be ready for the exam

THE COURSE

21/9: Introduction, basic concepts and motivation

28/9: Fundamental stellar structure equations

5/10: Equations of state

12/10: Energy transport

19/10: Nuclear processes

26/10: Stellar models

2/11: practice

9/11: Stellar evolution, basics and overall picture

16/11: Formation, Pre-Main and Main sequence phase

23/11: Post-MS evolution to helium burning phase

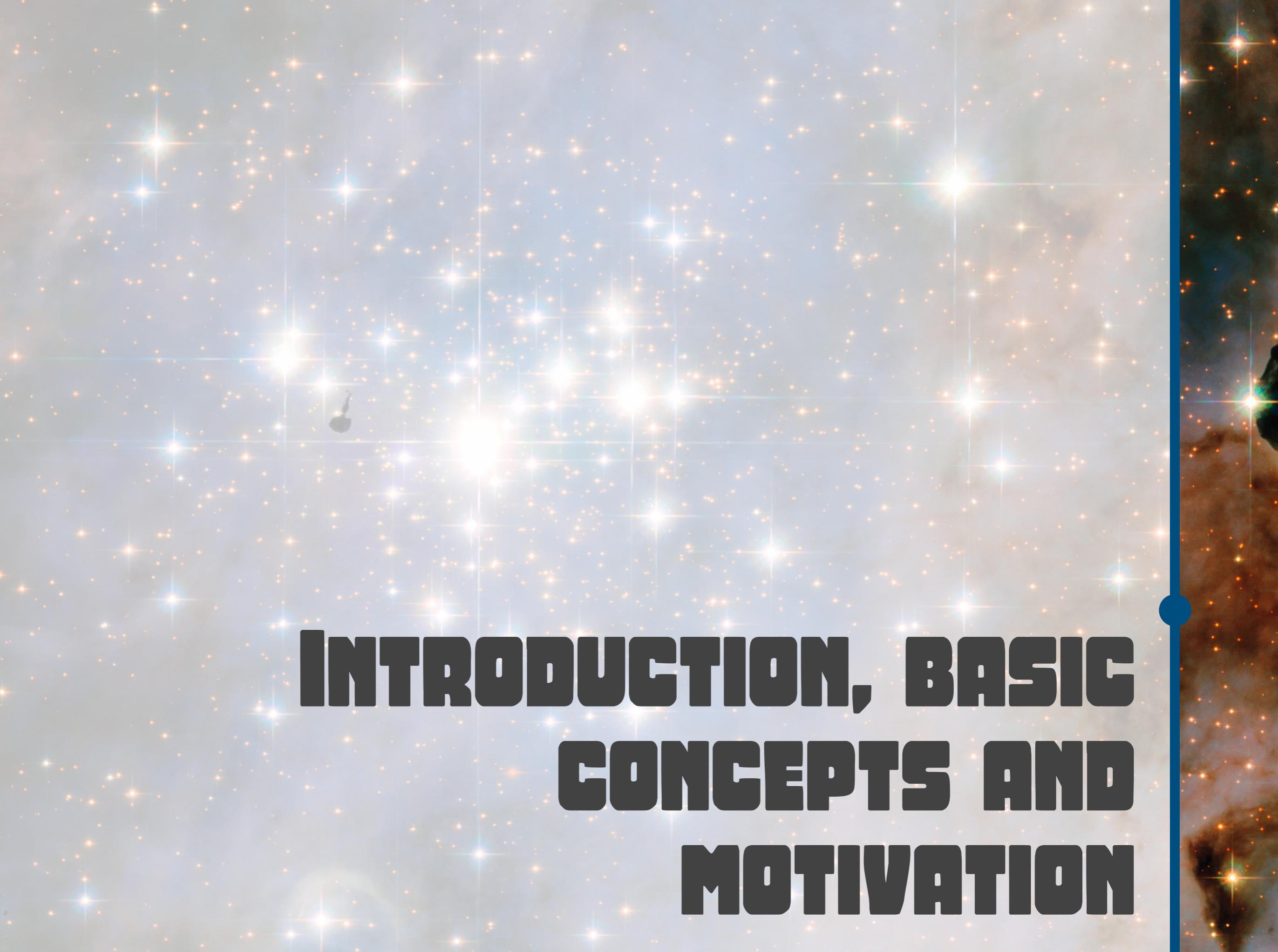
26/11 - 29/11 1 more class, date to be decided

(please fill the doodle): Later evolution low and intermediate stars

30/11: Late evolution of massive stars

7/12: Stellar explosions and remnants of massive stars





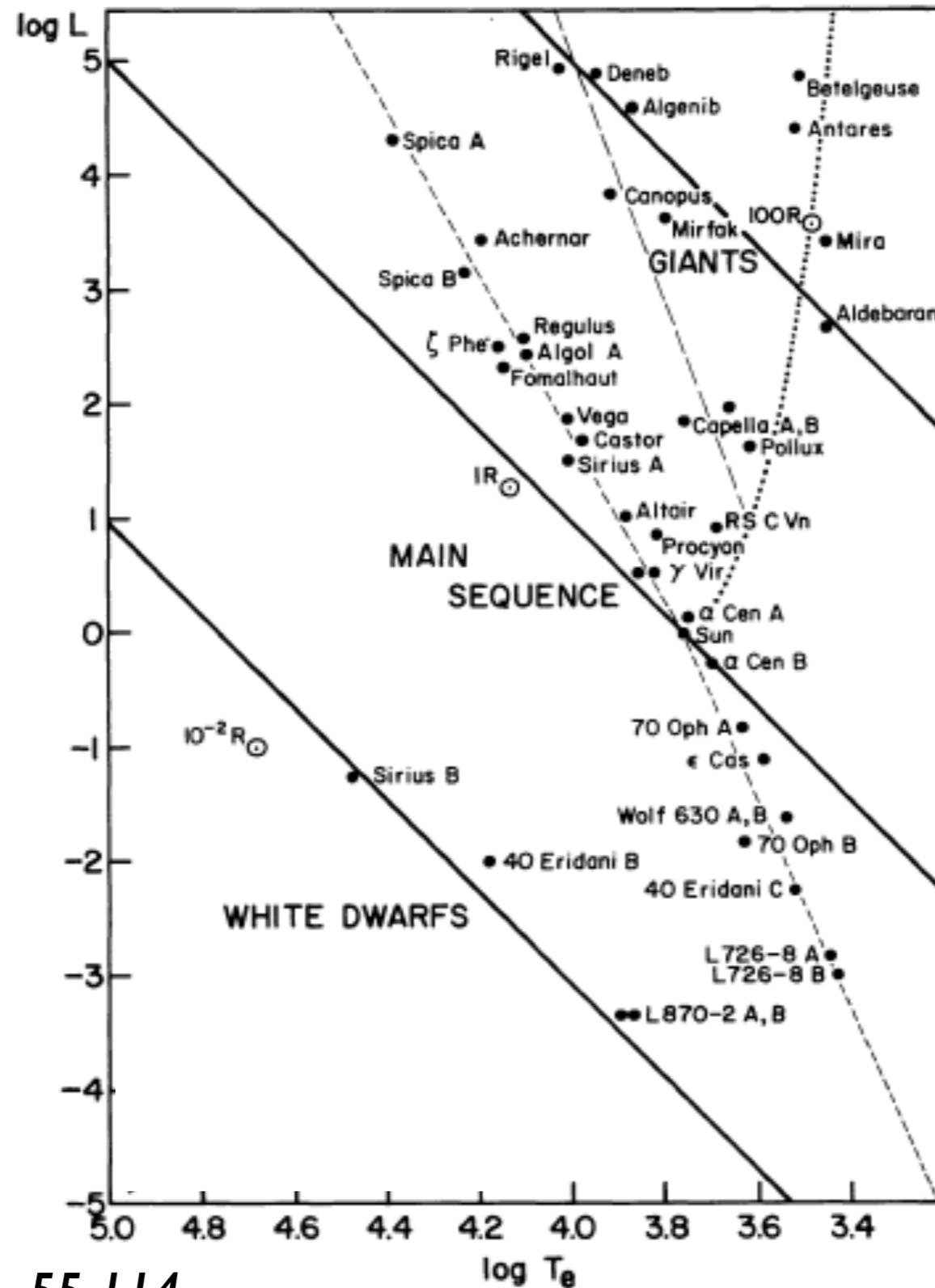
**INTRODUCTION, BASIC
CONCEPTS AND
MOTIVATION**

Class 1

**INTRODUCTION, BASIC
CONCEPTS AND
MOTIVATION**

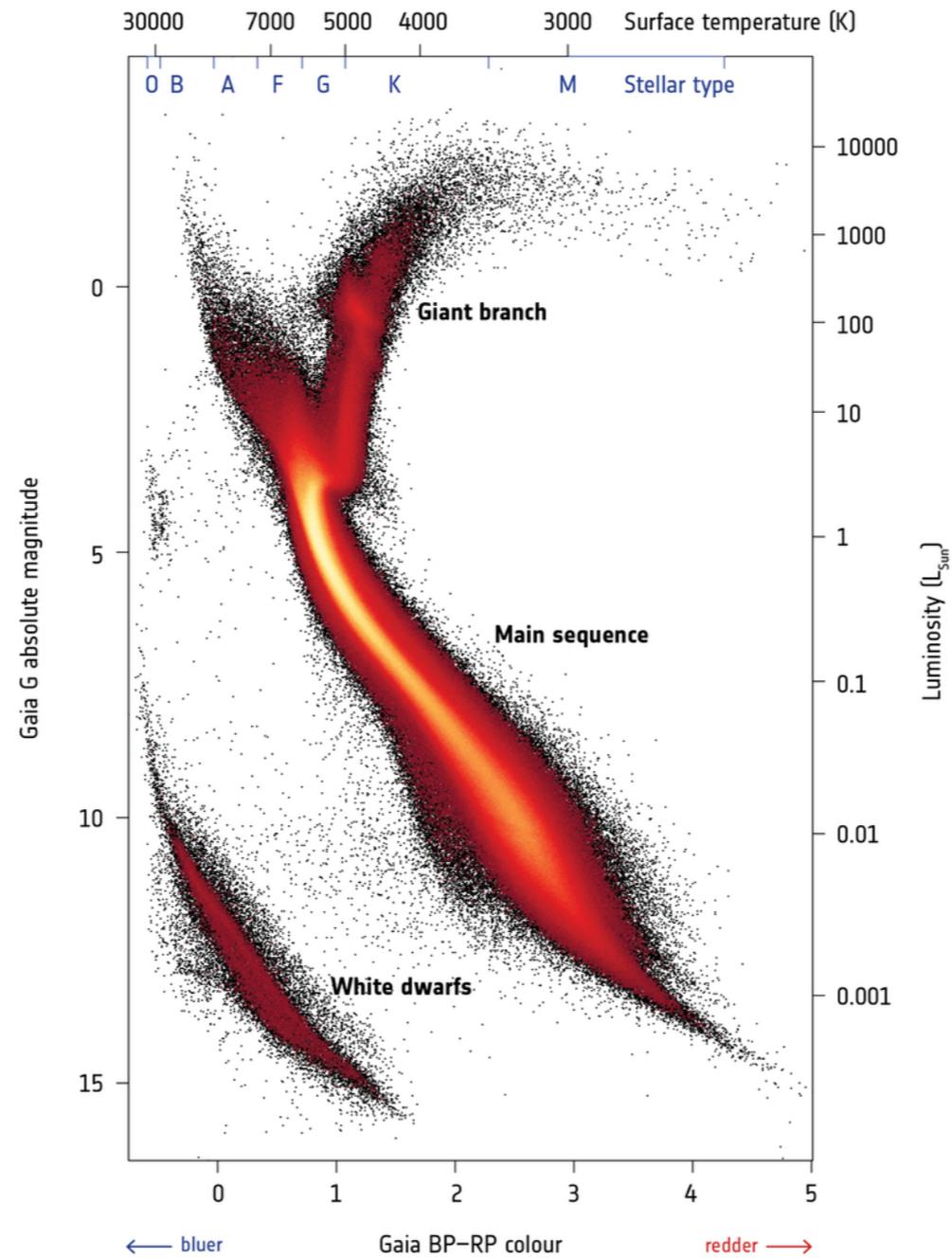


HR DIAGRAM



HR DIAGRAM

→ GAIA'S HERTZSPRUNG-RUSSELL DIAGRAM



HR DIAGRAM

for stellar clusters

**Check this!! Is the HR diagram for clusters from Gaia
<http://sci.esa.int/gaia-stellar-family-portrait/>**

