Dr. C. J. Neijssel
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Curriculum Vitae

About me

Curious and *excited* to learn new things.
Transparant and *dedicated* to the team.
Precise and *motivated* regarding my own projects.

Work experience

Oct 2020–present

Teacher, bachelor Physics & Astrophysics,
University of Amsterdam, Netherlands
Together with the coursecoordinator I teach different courses such as "Academic Skills", "Professional Skills" and "Back-on-Track". Based on my own scientific experience, I write new and creative teaching materials to improve the structure and relevance of our courses. I help in supervising and coordinating our team of teaching assintants ($\pm$ 10 persons) and I took charge in restructuring our administration such that the information is more complete, clearer and quicker to find. Aside from teaching, I also mentor students for which I followed multiple trainings (inclusivity, group dynamics, 1-on-1 converstations and suicideprevention). It is my passion to help students, especially those who are fascinated by physics but have difficulty in progressing. I always want to be there for students when they have questions, together we often find a solution. The many different aspects of this job require good communication and organisational skills with a clear vision on the long-term goals of our courses.

2016–2022

PhD. Institute for Gravitational-Wave Astronomy,
University of Birmingham, United Kingdom
Full-time research under the supervision of Dr. I. Mandel. The main scope was theoretical and statistical research into the evolution of massive stars in binary systems, especially when and how they form colliding black holes that are detected during gravitational-wave surveys such as those performed by LIGO. I helped in developing the research-code `COMPAS` (`https://compas.science/`) and supervising projects for bachelor- and masterstudents. I wrote software and performed data-science, -analysis, -engineering and -visualisation in Python and C++ to analyse the millions of different systems and parameters coming from our simulations. I did individual projects and helped collaborators in our team. My research led to new analytical models and predictions which are published in multiple journals and which I have presented on international conferences.

Education

2014–2016

MSc. Astronomy and Astrophysics, Anton Pannekoek Instituut,
University of Amsterdam, Netherlands
A master in astrophysics with 60 EC (1 full year) of courses and and 60 EC of research. Elective courses existed among others of Radio Astronomy (8/10), Particle Cosmology (8/10), and Interstellar and Circumstellar Matter (7.5/10). The research project, supervised by Dr. S. de Mink focused on interpreting the data of the VLT-Flames Tarantula Survey in the context of stellar evolution. My presentation won the price of best talk during the masterthesis symposium of our program.

2008–2014

BSc. Beta-Gamma (major in Physics), Institute of Interdisciplinary Studies,
University of Amsterdam, Netherlands
A interdisciplinary program with mostly courses in physics. I chose this program due to my broad interests in science. Aside from physics I also followed courses in Chemistry and Biology (8.5/10), The state and society (7.5/10), Logic (8/10) and worked on several interdisciplinary projects with fellow students following different majors.

Interests

Research	Interdisciplinary, statistics, positive impact on society
Design	Posters, data-visualisation, presenting, graphics and art
Education	Outreach, mentoring and coaching, supervising research projects

Skills

Coding	Python, C++, Latex, basics of HTML/CSS and Git-workflows
Languages	Fluent in English and Dutch, I speak a bit of Italian
Graphics	Datavisualisation in Python, basics of GIMP
Didactic	Training in group dynamics, inclusivity, 1-on-1 conversations, suicide prevention.
Research-techniques	Planning research, coding, statistics, large linked data-sets, data-analysis

Conferences

Australia	**Colloquium** - 26/02/2020, Melbourne University, Discussed the evolution of massive stellar binaries for X-ray Binaries and Binary Black Holes
Japan	**Chair** - LIGO/Virgo sources in O3 era, 20/01/2020 - 24/01/2020, Kavli IPMU Kashiwa, Introduced and lead the discussion on population synthesis in the morning session
Australia	**Collaboration Poster** - OzGrav ECR 17/11/19 - 22/11/19 in Lorne Designed and presented the collaboration poster for COMPAS
Germany	**Colloquium** - 30/08/2018 , AEI Hannover Presented work cosmic integration and rates of Binary Black Holes
England	**Talk** - EWASS 2018 03/04/2018 - 06/04/2018, Liverpool Presented my work on cosmic integration and rates of Binary Black Holes
Germany	**Talk** - ESO imbase 2017 03/07/2017 - 07/07/2017, Garching Presented my work on the formation and rates of Binary Black Holes
Netherlands	**Poster** - NAC 06/11/2015, Utrecht (Netherlands) The Dutch Astronomy conference where I presented results of my masterthesis.
England	**Talk** - Binary population synthesis workshop 08/08/2015 - 11/08/2015, Cambridge (U.K.) Presented my master-thesis science case for which I won a travel grant.

Selection of Published Papers:

Click here to view all on ArXiv or visit my web-page www.neijssel.com

Per category most recent placed first

First/Second Author Papers,

1. **Be X-ray binaries in the SMC as indicators of mass transfer efficiency**
   S.Vinviguerra, **C.J. Neijssel**, et al. (10 authors), arXiv:2003.00195, published in MNRAS
2. **The effect of the metallicity-specific star formation history on double compact object mergers**
   C.J. Neijssel, et al. (10 authors), arXiv:1906.08136, published in MNRAS
3. **On the formation history of Galactic double neutron stars**
   A. Vigna-Gómez, **C.J. Neijssel**, et al. (12 authors), arXiv:1805.07974, published in MNRAS

Papers with co-authorship that used results/pipelines from paper 2.

3. **The origin of spin in binary black holes:**
   Predicting the distributions of the main observables of Advanced LIGO
   S.S.Bavera, et al. (10 authors), arXiv:1906.12257
4. **The impact of pair-instability mass loss on the binary black hole mass distribution**
   S.Stevenson, et al. (7 authors), arXiv:1904.02821, published in Astrophysical Journal
5. **Accuracy of inference on the physics of binary evolution from gravitational-wave observations**
   J.W.Barrett, et al., arXiv:1711.06287, published in MNRAS

Papers with co-authorship through discussions/code support/providing figures etc.

6. **Luminous Red Novae: population models and future prospects**
   G. Howitt, et al. (8 authors), arXiv:1912.07771, published in MNRAS
7. **Detecting Double Neutron Stars with LISA**
   M.Lau, et al. (6 Authors), arXiv:1910.12422, published in MNRAS
8. **STROOPWAFEL: Simulating rare outcomes from astrophysical populations,**
   with application to gravitational-wave sources
   F.S.Broekgaarden, et al. (9 authors), arXiv:1905.00910, published in MNRAS
9. **saprEMo: a simplified algorithm for predicting detections of**
   electromagnetic transients in surveys
   S.Vinciguerra, et al. (6 authors), arXiv:1809.08641, published in MNRAS
10. **Exploring the Parameter Space of Compact Binary Population Synthesis**
    J.W.Barrett, et al. (5 authors), arXiv:1704.03781
11. **Formation of the first three gravitational-wave observations through isolated binary evolution**
    S.Stevenson, et al. (7 authors), arXiv:1704.01352 , published in Nature Communications

Papers with co-authorship through efforts during my master-thesis

12. **Predicting the Presence of Companions for Stripped-Envelope Supernovae:**
    The Case of the Broad-Lined Type Ic SN 2002ap
    E.Zapartas, et al. (13 authors), arXiv:1705.07898, published in Astrophysical Journal
13. **Delay-time distribution of core-collapse supernovae**
    with late events resulting from binary interaction
    E.Zapartas, et al. (11 authors), arXiv:1701.07032, published in Astronomy and Astrophysics
14. **The Tarantula Massive Binary Monitoring: I.**
    Observational campaign and OB-type spectroscopic binaries
    L.A.Almeida, et al. (27 authors), arXiv:1610.03500 , published in Astronomy and Astrophysics