

Zhiqiang Yan

Curriculum Vitae

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Research Interests

- Star clusters Constraining the formulation of the variable stellar initial mass function (IMF) and the sampling rule of star formation given an IMF (is the IMF a probability density distribution function or an optimal density distribution function?)
- Galaxies Modelling of the galactic stellar content (stellar population synthesis, SPS) with various star formation histories (SFHs) and the associated chemical abundance evolution of dwarf and giant elliptical galaxies (i.e. galaxy chemical evolution model, GCE).

Education

- 2017–2021 PhD student, Astronomical Institute of Charles University
- 2014–2017 MSc in astrophysics, University of Bonn, Germany
- 2009–2013 BSc in applied physics, Huazhong University of Science and Technology (HUST), China
- PhD Thesis Chemical evolution of elliptical galaxies with a highly self-regulated star formation process
- Supervisor Prof. Dr. Pavel Kroupa

Scholastic Awards and Curricular Achievements

- 2017–2021 Awardee of the the **State Scholarship of China**
- 2013–2017 Graduate with **"very good" (top score, 1.0), master thesis with publication (Yan et al. 2017)** on the subject of galaxy evolution and the IGIMF theory.
- 2009–2013 **Lecturer and co-leader** of the University team for China undergraduate physics tournament; Awarded the **outstanding graduates** of HUST.

Refereed and Accepted Publications

- Key Publications **Downsizing revised: Star formation timescales for elliptical galaxies with an environment-dependent IMF and number of SNIa**, *ASTRONOMY & ASTROPHYSICS*, 655, A19, November 2021. Yan, Jerabkova, Kroupa.
- Chemical evolution of ultra-faint dwarf galaxies in the self-consistently calculated integrated galactic IMF theory**, *ASTRONOMY & ASTROPHYSICS*, 637, A68, May 2020. Yan, Jerabkova, Kroupa.
- The star formation timescale of elliptical galaxies – Fitting [Mg/Fe] and total metallicity simultaneously**, *ASTRONOMY & ASTROPHYSICS*, 632, A110, December 2019. Yan, Jerabkova, Kroupa.
- Chemical evolution of elliptical galaxies with a variable IMF – A publicly available code**, *ASTRONOMY & ASTROPHYSICS*, 629, A93, September 2019. Yan, Jerabkova, Kroupa, Vazdekis.

The optimally-sampled galaxy-wide stellar initial mass function - Observational tests and the publicly available GalIMF code, ASTRONOMY & ASTROPHYSICS, 607, A126, November 2017. Yan, Jerabkova, Kroupa.

ADS library: <https://ui.adsabs.harvard.edu/public-libraries/203Lc2HiQ5WJmhfNpyz19Q>.

Conferences and Talks

- 2021 to date Organiser of the weekly Galaxy-IGIMF meeting for an international team, Virtual meeting
- June 2021 European Astronomical Society Annual Meeting (**EAS2021**) Mini-talk in Special Session SS28, Virtual meeting
Talk title: *Early-type galaxies: a comprehensive understanding of their formation and chemical enrichment with a systematically varying integrated initial mass function (IGIMF)*
- Jul 2020 **The Kavli Institute** for Astronomy and Astrophysics, Beijing, Lunch Talk
Talk title: *Chemical abundances in the ISM: the litmus test of stellar IMF variations in galaxies across cosmic time*
- Nov 2019 **Invited external expert** on the IMF for workshop: International Space Science Institute, **ISSI meeting** in Beijing, "Chemical abundances in the ISM: the litmus test of stellar IMF variations in galaxies across cosmic time"
Talk title: *Variable IMF theory (IGIMF) and its implications*
- Oct 2019 **Prague-Bonn galaxy meeting** at the Astronomical Institute of Charles University
Talk title: *Chemical evolution of (elliptical) galaxies*
- Aug 2019 Visit the **University of Bonn**
Talk title: *Variable stellar IMF (the IGIMF theory) & its applications*
- May 2019 Collaborative visit of Prof. Glenn van de Ven at the **University of Vienna**
Talk title: *A cost-efficient numerical galaxy chemical evolution model (able to adopt a variable IMF)*
- May 2019 **The Lorentz Center workshop** in Leiden, Metals in Galaxies, Near and Far: Looking Ahead
Talk title: *How does the IGIMF theory Influence the galaxy chemical evolution?*
- Apr 2019 **Seminar of the Astronomical Institute of Charles University**
Talk title: *Galaxy under a different view, Variable stellar mass distribution, the IGIMF theory, and galaxy evolution*
- Feb 2019 Visit the **University of Bonn**
Talk title: *Galaxy under a different view, The IGIMF theory & its implications*
- Jan 2019 **Invited external expert** on the IMF for workshop: International Space Science Institute, **ISSI meeting** in Bern, "Chemical abundances in the ISM: the litmus test of stellar IMF variations in galaxies across cosmic time"
Talk title: *GalIMF, A Python3 code that realise the IGIMF theory & apply it on galaxy chemical evolution*
- Dec 2018 **Aarseth N-body 2018 meeting** in Prague
Talk title: *The variable stellar Initial Mass Function and its indication on the variable binary fraction*
- Oct 2018 Lecture at the Astronomical Institute of Charles University
Talk title: *Towards the understanding of giant elliptical galaxy*

Technical Skills and Project

Programming PYTHON3, CLISP

Project **Main developer** of the code GALIMF (<https://github.com/Azeret/galIMF>), a Python3 program that computes the galaxy-wide initial stellar mass function based on locally-derived empirical constraints following the IGIMF theory and coupled with an independently-developed single-zone galaxy chemical evolution module that self-consistently evolves the galaxy-wide IMF and element abundances.