

WORKING GROUP

RED GIANTS AND SUPERGIANTS

GEANTS ROUGES
ET SUPERGEANTS

CHAIR ORGANIZING COMMITTEE

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TRIENNIAL REPORT 2018-2021

1. Introduction

The Working Group on Red Giants and Supergiants followed on from a Working Group on Abundances in Red Giants. This was motivated by the recognition that both lower- and higher-mass luminous cool giants are important agents of galaxy evolution, not just in terms of chemical abundances but also dust and stellar remnants. These stars are among the most luminous stars that can be detected in distant galaxies, especially at infrared wavelengths, and they are thus also important tracers of the underlying stellar populations. Some of the main gaps in our understanding of astrophysics are exemplified in these extreme phases of evolution: convection, pulsation, mass loss, chromospheres and dust formation, the onset of asymmetries and enigmatic explosive ends in supernovæ of type II, electron-capture or – eventually – Ia or Ib.

2. Developments within the past triennium

The re-invented Working Group set itself three main tasks: [1] to improve diversity in representation and foster an inclusive culture within the field; [2] to maintain and enhance the AGB Newsletter as one of the platforms for intellectual exchange; [3] to organise a focus meeting to identify the main scientific problems and the road ahead, culminating in a “White Paper”.

The membership of the Working Group’s Organizing Committee underwent a partial overhaul, keeping some key players in the field but also welcoming rising stars, broadening also the scientific basis to better reflect the new scope of the Working Group. It also was from within this Working Group that the idea arose to establish an anonymous reporting tool – the IAU Ombud – which was subsequently and successfully piloted within Commission G3 and which has since been recommended to the Executive Committee by the Working Group on Equity and Inclusion.

Most of the committee members have written an “opinion piece” in the AGB Newsletter, a new column to raise a point and stimulate discussion. The AGB Newsletter continues to reach a readership of over 2000, with around 30 contributions (abstracts of papers, announcements of meetings, theses, et cetera) appearing in each monthly edition (which is nearing #300). This is proof of the vibrancy of the field and the ongoing quest to solve some of the most stubborn problems in astrophysics.

A Focus Meeting was proposed for the 2021 General Assembly, but this was not supported. We therefore decided to go ahead and organise the meeting anyhow: “GAPS 2021 – unsolved problems in red Giants And suPergiantS” (co-Chaired by Gioia Rau). Due to the covid-19 pandemic this ended up being a virtual meeting, taking place 14–18 June 2021, under the auspices of Commission G3. The benefit of that format is that it is easier for people to participate, though the time zones still pose a challenge. As planned, we wanted the meeting to be community driven, and after advertising and encouraging junior and less visible researchers to come forward we received a healthy number of volunteers to introduce and lead the topical discussion sessions. These were selected through double anonymous voting. At the time of writing, the workshop had yet to take place, but the product of the meeting is envisaged to be a White Paper, with further input from the community after posting on arXiv, to identify the main problems and possible pathways to their resolution. In conjunction with the scientific meeting a public science-art competition was envisaged, sponsored by MDPI Journals.

3. Proposal for the next triennium

The outcome of the June 2021 focus meeting will set the agenda for the coming triennium. All organizing committee members agreed that the Working Group must continue, and all agreed to continue to serve on its organizing committee. Gioia Rau has agreed to take over as Chair; the outgoing Chair will stay on the committee to support Gioia in her new role. The organizing committee membership may be revisited after one year, once the road ahead is clear. It will also need to define the role of the Working Group membership at large, as recent months have seen several (mostly junior) researchers asking to become a Working Group member.

This will be an opportunity to galvanize the community, and amalgamate the individual efforts and different approaches into concerted action that is more likely to gain the support from facilities and funding agencies, and that is more likely to preserve knowledge and sustain progress, being inclusive to the diverse talent and ideas. We plan to organize a School on the topic of our Working Group, or contribute to a School on Stellar Evolution, offering virtual as well as in situ participation (if possible).

Jacco Th. van Loon
Chair of the Working Group