

## Research Report

### ICRR Inter-University Research Program 2020

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| <p>Research Subject:</p> <p>2<sup>nd</sup> symposium "Dark Matter searches in the 2020s" ("Kashiwa Dark Matter symposium")</p>   |
| <p>Principal Investigator:</p> <p>Dr. Moritz Hütten</p>  |
| <p>Participating Researchers:</p> <p>Prof. Kohei Hayashi<br/>Prof. Masahiro Teshima<br/>Prof. Tatsuo Yoshida</p>   |
| <p>Summary of Research Result :</p> <p>The "Kashiwa Dark Matter symposium 2020" was the second symposium of the series established in 2019. It was held virtually from November 16 to 19, 2020, lasting four hours each day. As in 2019, it covered recent processes in searches for Dark Matter (DM) in collider, direct, and indirect experiments as well as DM theory.</p> <p>Due to the Covid-19 pandemic, the symposium could not be conducted at Kashiwa Research Complex as initially planned. Instead, it was shifted to a virtual format. For a seamless experience of a virtual conference, a dedicated webpage was set up with the program, registration, and access points to the virtual platforms of the event at <a href="https://2020.kashiwa-darkmatter-symposia.org/">https://2020.kashiwa-darkmatter-symposia.org/</a>. No conference fee was charged. The talks and oral discussions were held on Zoom in webinar mode, and the coffee breaks and poster session used the SpatialChat tool. For chat discussions, a Slack channel was created. The oral talks were additionally publicly live streamed on YouTube.</p> <p>290 people registered to the symposium from 33 countries worldwide. As an advantage of the online format, numerous people could participate who potentially could not have been able to travel to Kashiwa because of limited time and budget. 165 registrants (57%) were affiliated to a Japanese institution. 29% of all registrations were graduate students, 19% postdoctoral researchers, and 42% faculty staff (remaining participants were without attribution). 20% of all registrants were female.</p> |

Due to the online format and to allow people to participate from various time zones, the schedule was set to four hours a day. Eight distinguished highlight speakers were invited: Tobias Binder (Kavli IPMU), Oleg Brandt (University of Cambridge), Francesca Calore (LAPTh Annecy), Jodi Cooley (SMU Dallas), Mariangela Lisanti (Princeton University), Manuel Meyer (ECAP Erlangen-Nürnberg), Marc Schumann (University of Freiburg), and Masaki Yamada (Tohoku University). Additionally, two special invited talks were allocated, plus 31 contributed talks and 27 virtual poster presentations.

The program in 2020 covered recent updates from the Dark Matter searches in the different fields. A focused session was scheduled on Axion and Axion-like DM candidates and searches with different detection techniques. Also, a session on DM Astrophysics provided latest constraints on DM distributions as basis for direct and indirect DM searches. As one of the highlight results from 2020, special attention was given to the excess signal claimed by the Xenon1T experiment, which was covered by several talks. In the Indirect Detection session, a focus was drawn current and future searches in various electromagnetic wavelengths from X-rays to TeV gamma rays, as well as in neutrinos. Presented collider searches comprised results from the LHC and other experiments, and prospects for the future. In the theory session, the focus was drawn on models to be probed in indirect searches. All presentations and short poster advertisement videos have been uploaded to YouTube in high quality, where they are publicly available (see link to the webpage below).

The participant feedback from a dedicated follow-up survey answered by 48 participants was fairly positive: Participants rated the symposium with 4.4 out of 5 points. Additionally, many suggestions for topics to cover in future years were provided. ICRR Inter-University Research Program's Committee has approved the request to carry over the remaining research budget for the next symposium in the fiscal year 2021. The next symposium 2021 in the series is already envisaged: Depending on the COVID-19 situation, it will be again conducted in a virtual format or hybrid scheme, allowing both virtual and in-person participation.

All information, talk recordings, slides, and posters are available through the website: <https://2020.kashiwa-darkmatter-symposia.org/>

No.