vAGM 2025 Proposal for CASCA

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EXECUTIVE SUMMARY

The report is supplementary reading to the town hall to discuss the vAGM 2025 motion to be put forward by the Board prior to the business meeting at CASCATO 2024 in Toronto. The aim of the town hall is to gather ideas from the CASCA community about organizing an effective virtual meeting, as well as questions and concerns about the virtual format. In this report, we explain the rationale behind a virtual AGM based primarily on providing equitable and inclusive access to the AGM for all members, as well as minimizing the environmental impact mainly from air travel to the meeting. We include a section on long-term challenges and concerns with the virtual AGM format, especially impacting graduate students and early career researchers, which were gathered from surveys and discussions so far. As a starting point, we have sketched out ideas for a successful virtual meeting, including ideas for components such as networking, presentations, and poster & booth sessions. We are keen to continue this conversation with the community during the town hall and beyond in order to incorporate your ideas in the design of vAGM 2025. We request the CASCA community to support the motion, and give us an opportunity to showcase a successful virtual AGM in 2025.

1 Preface

In response to the motion presented by the CASCA board, this is a proposal for a virtual annual general meeting (AGM) in 2025. This proposal is the outcome of a collaboration between the Sustainability committee, Equity & Inclusion committee and Postdoctoral Fellows committee, with additional participation by the organizing committees of the 2020, 2021, and 2022 virtual CASCA AGMs (contact email below[1]). Information from the 2023 and 2024 graduate student surveys relayed to us by the Graduate Student Committee (GSC) provided additional valuable input. The team was led by Deborah Lokhorst (Chair, Postdoc Committee).

2 Introduction

The format of large academic conferences is being re-examined across many disciplines, driven primarily by **two major concerns about in-person meetings**: (i) the constraints they impose on full accessibility, inclusivity, and participation by *all* members (**equity issues**), and (ii) their significant ecological costs, primarily around conference travel (**climate and sustainability issues**). A virtual CASCA AGM in 2025

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(vAGM 2025) would be an excellent showcase of CASCA's ability and leadership to address both these issues simultaneously. However, **virtual options raise concerns** about interpersonal interactions, especially for graduate students and early-career researchers (**networking issues**), and must be carefully designed to achieve full and rewarding participation for all the attendees (**engagement issues**). Because of the vast experience gained in organizing virtual meetings during the pandemic, there is now a large sample of virtual conferences to examine, including CASCA's own, as well as a large new body of literature and experience on the benefits and challenges they uncovered. At the same time, the range of virtual tools and expertise has been growing rapidly. We briefly review all of these topics, taking care to clearly address the benefits and challenges of virtual meetings.

The report is organized as follows. In Section 3, we expand on the primary motivations behind vAGM 2025. We devote Section 4 to list the community concerns we have gathered so far regarding vAGM 2025, and virtual meetings in general. In Section 5, we have provided several ideas for how one could organize and run a successful vAGM 2025 based on our experiences, and using approaches proposed in recent literature. We have aimed particularly to fold in ideas to mitigate the concerns to the extent possible with available virtual meeting tools. This is very much open-ended, and we seek community, especially graduate students' and early career researchers' input and ideas to design and run an engaging and effective virtual AGM in 2025. We have summarized the main points in Section 6.

3 Motivations for vAGM 2025

Here we expand on our primary motivations for vAGM 2025, how it would provide tangible benefits for equity, inclusion and accessibiltiy, and toward climate and sustainability. For the sake of completeness, we also briefly touch upon the legacy benefits of vAGM 2025.

3.1 Benefits for Equity, Inclusion, and Accessibility

vAGM 2025 and virtual meetings in general have great potential to address a number of barriers to full participation, while improving accessibility and equity for those who do participate. These aspects of virtual meetings have been demonstrated in CASCA's own vAGMs[2] and in well-studied external examples [1–16]. Those who benefit most are:

- **Caregivers:** Travelling to attend in-person meetings is particularly challenging for participants with caregiver duties, including childcare [17]. Although professional childcare services may be provided during the meeting[3], other difficulties (for example, additional travel expenses) still remain. Furthermore, in some instances the caregiver may not be able to leave home for an extended period of time. vAGM 2025 will remove this obstacle and enable members of this group to fully participate in the meeting, especially if any needed financial support to arrange for caregiving assistance (at their place of residence) is provided.[4].

- **Those with physical disabilities and mobility challenges:** Although many conference venues are accessible, not all are, and in-person conferences pose difficult logistical challenges to those without full mobility. vAGM 2025 has the potential to provide full participation, regardless of disability.

- **Deaf participants and non-English speakers:** There is potential for the vAGM 2025 platform to provide simultaneous captioning, translation, and sign language narration.

[2] vAGM 2021 report: `https://docs.google.com/document/d/1rv-O2lwsBZqXvbY81LgL51kPfu6naIhFljGhsPMIfPQ/edit`

[3] CASCATO 2024 childcare survey form: `https://docs.google.com/forms/d/e/1FAIpQLSdJuD7Ymwx9eOVuFnyLBecTlzbdq08SzoSoTA5_siS0K68SUg/viewform`

[4] Note that childcare support was provided for the CASCA 2021 vAGM, although it was not fully utilized.

- **Those with restricted funding:** Attending in-person meetings incurs significant expenses for those who need to travel. vAGM 2025 eliminates these expenses along with most of the registration cost. Costs to attend AGMs in major metropolitan areas can exceed $2000 for travel, registration, and accommodation. CASCA financial support is limited and only available to graduate students. Members must weigh attendance with other costs – and those who lack generous research funding are effectively excluded. vAGM 2025 will vastly reduce these financial barriers, and thus significantly improve the representation of groups with the most restricted funding, including early-career researchers (students and postdocs, retirees, and amateur astronomers).
- **Those in remote areas:** Virtual meetings, such as vAGM 2025, are explicitly inclusive of participants from remote communities for whom travel is impractical for a number of reasons, including higher travel expenses and longer travel time. Virtual meetings remove logistical barriers for participants from small towns, remote Indigenous communities, and the Canadian North. In addition, the virtual format presents the opportunity for the inclusion of members in foreign countries (in particular, early-career researchers and staff members at remote observatories). Studies find significantly broader geographical representation in virtual conferences [13].

CASCA's own experience indicates that virtual AGMs stimulate significantly higher participation than in person AGMs: the 2023 in person AGM in Penticton BC had 288 registrants, whereas the 2021 vAGM had 503. Similar trends were seen in other fields, with the American Physical Society's 2020 virtual AGM seeing more than four times the regular attendance [1].

3.2 Climate and environmental benefits, and the sustainability of CASCA

In response to a white paper on CASCA's place in a low-carbon future [18] submitted to its committee, the Long Range Plan (LRP) 2020-2030 put forward two recommendations regarding sustainability[5] in view of what it termed the 'vast and unparalleled' crisis resulting from climate change. These recommendations are (i) that CASCA must make sustainability an explicit part of its ethics and values, and (ii) that the organizers of astronomy related events, mainly meetings, pay careful attention to frequency, timing and locations specifically to minimize *air travel* and consequent greenhouse gas (GHG) emissions from our professional activities. The recommendation goes on to encourage remote participation at meetings and other events using effective online platforms.

Following the LRP recommendation, environmental sustainability has been incorporated as one of CASCA's core values. Concerns over the impacts of our professional activities have motivated a special issue of *Nature Astronomy* [19], and led to the formation of CASCA's Sustainability Committee. At the time of writing, the consequences of climate change wrought by burning fossil fuels are intensifying. 2023 was the hottest of the previous 125,000 years, bringing dangerous levels of wildfire smoke to most of North America and a wide spectrum of other climate impacts [20–22], such as the fact that one quarter of humanity is now affected by drought [23].

In this context, vAGM 2025 offers a first but important step that we, as the CASCA community, can take toward reducing our carbon footprint. In addition and in keeping with the LRP recommendation, individual members, especially senior astronomers, should evaluate continually their need for air travel.

As a simple metric, we have quantified the GHG emissions associated with *air travel alone* to the CASCA AGM 2023. We used an online carbon footprint calculator[6] to estimate the average and the total tonnage. CASCA AGM 2023 was the first in-person meeting (with optional online participation) after the pandemic. Hosted jointly by the DRAO (Dominion Radio Astrophysical Observatory) and UBC-Okanagan, the meeting was held in Penticton, BC with 288 registered participants, of which 42 were online only. Based on the affiliations listed for these participants and assuming round-trip air travel, the

[5] LRP report, Chapter 7: Sustainability, page 120: `https://casca.ca/wp-content/uploads/2021/05/LRP2020_final_EN.pdf`

[6] `https://www.less.ca/en-ca/flights.cfm`

total GHG emission was 182 tons for in person participants, with a mean of 0.74 tons/participant. The saving due to online participation was 36.7 tons for the 42 online participants.

One can compare these values to the Canadian annual per capita GHG emission of 15 tons (one of the world's highest, twice the European average, and nearly thrice the world average). Using this figure, the average GHG emission of 0.74 ton/participant to the 3-day CASCA AGM 2023 from air travel alone is equal to 5% of the average Canadian's yearly output.

In summary, CASCA's one major activity – its AGM – is a notable source of per-capita emissions when run entirely in person. vAGM 2025 would provide a tangible reduction in this climate cost.

We emphasize that GHG emissions from other sources related to our professional activities, such as observatories, supercomputing and data storage, and observatories should also be taken into account, and steps adopted to address these. In this context, it should be mentioned that as a society of professional astronomers, CASCA's terms of reference and mandate are clearly defined. The society can lobby the Government in support of the scientific activities of its members, but not about matters which lie outside this scope, such as the environmental impact of Canadian industries. In summary, along with asking for support from the CASCA community to adopt vAGM 2025, we are also actively seeking ideas on all measures we can adopt to reduce our carbon footprint.

4 Challenges and concerns of vAGM 2025

We propose the vAGM 2025 to address specific concerns of in person AGMs, primarily related to equity and inclusivity as well as to sustainability and environmental impact (see Section 3). However, virtual meetings bring their own issues and challenges. We have gathered some of these concerns, mainly related to loss of networking opportunities especially for graduate students and early career researchers and lower engagement in a virtual meeting environment. These concerns are compiled from a post-meeting survey after the vAGM 2021, from surveys about vAGMs conducted by the GSC in 2023 and 2024, as well as from discussions with members of the CASCA community. We are actively seeking further input from the community via the town hall and other avenues (at the email provided[7]).

We devote a section specifically outlining impacts of a vAGM on graduate students, who are disproportionately affected by the virtual meeting format.

4.1 Concerns raised by Graduate Students

These concerns have been collected from two surveys focussed on vAGMs conducted by the GSC in 2023 and 2024. Postdocs and early career researchers are also affected by these, but perhaps to a lesser extent.

- **Fewer networking opportunities**: The loss of networking opportunities with peers and senior researchers dominated the concerns raised by the graduate students. Networking includes both research related discussions, as well as career related meetings with fellow graduate students and senior researchers. Also included here are chance encounters at coffee, lunch or other social events which may lead to new ideas, future collaborations and job opportunities, and explorations in areas of common interest.

- **Lower exposure for thesis talks**: Another common concern involved the possibility that a graduate student presenting their thesis talk in their graduating year would receive lower exposure within the vAGM format in ways that would impact their networking and prospects for their future careers in Canada.

- **Relevance of climate impacts:** Some respondents expressed doubts about the significance of emissions related to CASCA AGMs, in the context of Canadians' high per capita emissions, or relative

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to the emissions from our professional infrastructure (observatories and computing). Others note that the AGM affects mostly junior researchers, whereas senior academics travel significantly more.

4.2 Concerns with Engagement

One of the large issues with vAGMs that was noted by conference participants after the CASCA vAGM in 2021 was a lack of engagement and a difficulty in sustaining attention throughout the conference[8]. This was a difficulty during both oral presentations as well as poster sessions.

- **Consistent engagement in talks.** Many virtual conference attendees noted that it was difficult to sustain their engagement in the oral presentation sessions throughout the conference, with screen fatigue being commonly mentioned as an important factor. Screen fatigue is a well-known psychological consequence of spending hours per day on videoconferencing and communication platforms. The causes of screen fatigue include 1) excessive eye contact and face time, 2) seeing yourself during video chats, 3) reduction of mobility when on camera, and 4) increase in cognitive load due to lack of nonverbal cues. Another cause of increased cognitive load is poor sound quality in talks[9].
- **Engagement with posters and poster presenters.** In general, attendees of the 2021 CASCA vAGM found viewing and interacting with the posters challenging. There were two main issues identified by the post-AGM survey: participants found it difficult to browse and locate posters, due to the lack of a centralized display for all posters, and the lack of easy engagement of conference attendees with the poster presenters. Engagement with the posters varied: some participants did not view any posters, while others had positive experiences interacting with posters and their presenters.
- **Visibility of CASCA awards and press releases.** There is genuine concern that vAGMs will lead to less acknowledgment and visibility for the CASCA awards recipients. In addition, survey respondents also noted that the virtual forum may not be effective in drawing the attention of the media for press releases.
- **Maintaining engagement with professional and industrial booths.** There can be a challenge replicating the professional and industrial booths that can be set up at in-person conferences.

4.3 Logistical Concerns

- **Challenges with new technology.** As mentioned above, it can be challenging to engage in the various proceedings and events at the virtual conference, while also learning to effectively use a new digital platform.
- **Time zone challenges.** It may be challenging to organize all the proceedings in a virtual conference during 'normal hours' in all the time zones in Canada. This may limit the content and the breadth of topics covered during the virtual AGM.

5 Ideas for a Successful vAGM 2025

In this section, we sketch out ideas for a successful vAGM 2025, from organization to implementation. We have collected these ideas from literature available on the topic, the growing documentation associated with virtual meeting platforms, and from individual experiences with the organization and attendance of virtual conferences. The vAGM 2025 is hoped to be a reinvention of previous online CASCA

[8] See also https://hbr.org/2020/12/reimagining-medical-conferences-for-a-virtual-setting?autocomplete=true

[9] See https://effortless.shure.com/content-hub/posts/why-audio-matters-in-video-conferencing/

AGMs, and we intend to consider a radical change in the AGM schedule to take advantage of the asynchronous online format. We encourage the reader to reach out to the authors of this document (at the email provided[10]) with any additional ideas or input for a successful virtual meeting.

5.1 Networking

In this section, we put forward some ideas for networking in a virtual format.

- **Match graduate students with senior researchers and initiate networking prior to the commencement of the conference.** The matching may be done based on keywords drawn from presentation or poster abstracts submitted by the graduate students and research areas of senior researchers registered for the meeting. This method has been successfully used in prior conferences [24], normally using an AI-based algorithm, such as "paper-reviewer-matcher" [25] to reduce the overheads on the organizing committee.
- **Run a "speed matching" or "speed mentoring" event.** In this event, volunteer senior researchers move from one group of graduate students to another discussing research ideas. Graduate students in a group are randomly assigned to further encourage cross-pollination of ideas and improve networking. In a virtual setting, these 'speed matching' events could simply be run in a series of zoom breakout rooms, for example.
- **Virtual coffee meetings.** Incorporating elements such as virtual coffee breaks or dedicated casual chat sessions at the beginning or end of each day's proceedings could foster a sense of connection among participants. In addition to real-time interactions, asynchronous messaging boards or discussions could significantly enrich the vAGM 2025, which could have longevity past the meeting. Participants can engage in conversations at their own pace, irrespective of their time zones or scheduling constraints.
- **Professional and industrial booths.** Incorporate virtual booths for industry and academia in the vAGM 2025, with a focus on providing a career connection for graduate students and early career researchers. See Section 5.4 for more ideas on implementing booths.
- **Local hubs.** A vAGM 2025 with the add-on of local hubs offers an additional option for networking locally in the hubs. Local hubs are geographically-distributed in-person additions to a virtual meeting, where participants have the option to participate in the vAGM in person at one of several locations spread throughout Canada (traveling a short distance to reach the hub if needed).

5.2 Scheduling

While virtual meetings could allow a full upheaval of the typical conference schedule (which we intend to consider), we describe here some ideas to increase engagement in a virtual conference in general, including those with talk sessions that follow the typical synchronous (or dual-stream) talk schedule in a CASCA AGM. An example of a schedule optimized to prioritize science talk and poster sessions for a vAGM 2025 is shown in Figure 1. Note that the schedule could be alternatively optimized, such as for increased interactions and networking time.

- **Schedule thesis and awards talks intentionally to increase attendance and visibility.** By scheduling keynote talks intentionally, such as in a single stream to maximize attendance and at an accessible time for all time zones, attendance and engagement with these talks can be prioritized. In a virtual format, the keynote talks could be attended by an even wider audience (comparing the numbers of attendees at previous in person and virtual CASCA AGMs). A related idea is to

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also open these talks up to non-CASCA participants, further increasing visibility by allowing the greater astronomical community to attend the awards and thesis talks.

- **Incorporate down time in the vAGM schedule.** For a successful vAGM 2025, where participants are engaged and active online, sufficient break time is necessary. This down time should not be scheduled in tandem with poster sessions or other meetings, so that all conference participants have the opportunity to take a break without missing out on part of the meeting.
- **Schedule sessions outside of a five-day span.** Select sessions could take place the week prior, such as the Graduate Student Workshop and the CASCA business meetings. This would allow shorter vAGM 2025 conference days to be scheduled which accommodates the 4.5 hour time zone difference across Canada.
- **Hold practice sessions before the conference.** This enables participants to practice connecting with their devices, install required updates if necessary, and get used to the virtual environment overall. This reduces the learning curve once the conference begins to allow better engagement.

5.3 Presentations

Virtual meetings typically utilize screen-sharing technology through a digital platform to share presentations. We share some ideas in this section to facilitate engagement in presentations.

- **Include the ability to turn off/on cameras and "self-view".** This can help mitigate the causes of screen fatigue and allow participants to take mobility and mental breaks where they do not have to be seen.
- **Incorporate a chat or Q&A interface during the talks where participants can vote on questions.** This enables popular questions to be prioritized during live Q&A sessions after the talks.
- **Provide conference participants with clear advice and best practices for participating in remote conferences.** This includes advice such as removing competing commitments, clearing schedules and removing distractions at their remote location.
- **Encourage conference presenters to use techniques to make their talks engaging.** This includes sticking to a few key messages, adding entertainment into the talks (jokes, analogies, etc.), using clever visual design (videos, animations, etc.), and embracing the idea that "short is sweet". Viewing statistics show that just one boring talk is enough to lose conference viewers ([26] p. 58)
- **Follow rigid timing during talks if dual-stream sessions are scheduled.** Conference organizers and talk session chairs should follow rigid timing for the talks to allow people to schedule their time, which is especially important due to the multi-time zone aspect of the vAGM 2025. Pre-recording talks or simply muting speakers after their allotted time is up are two options to ensure adherence to time limits.

5.4 Posters & Booths

Poster sessions are a crucial part of AGMs, with most attendees presenting their work as posters. Professional & industrial booths are also an important part of AGMs, increasing awareness and connectivity to resources and career paths throughout academia and industry. Posters and booths have similar challenges in transitioning from a physical to virtual format. As per the previous section, we share some ideas here for increasing participant engagement with posters and booths during a virtual meeting.

- **View posters/booths with sorting and filtering options, and thumbnail "quick-views".** A platform that displays poster/booth thumbnails when viewing them as a collection could make it easier for attendees to browse and quickly find posters/booths of interest. This idea emulates the experience of moving through an in-person poster session or fair, as the posters/booths can be viewed quickly without the need to spend time downloading them.
- **Incorporate additional digital content.** A digital platform can allow posters/booths to incorporate digital content such as videos, audio clips, and interactive text windows. This elevates posters past their typical PDF format, and can increase participant engagement with the posters and booths.
- **Choose a platform where participants can both view posters/booths and interact with the presenters.** This would remove the need to switch between platforms when participants wish to interact with the conference presenters, whether in the form of text messaging (in groups or directly) or video conferencing.
- **Q&A/Chat interfaces for each poster/booth.** A continuous chat interface with options for direct messaging and group messaging could enable an ongoing interaction with posters and booths. This chat could also serve as an "FAQ", allowing other participants to review previously asked questions. Chat and video sessions could also be recorded for later viewing in the future, providing an instant log of questions and discussions carried out. This increases visibility as the information can be archived and referenced in the future.
- **Advertising posters/booths.** Lightning talks or digital advertisements between sessions could be used to advertise posters and booths.

5.5 Digital Legacy

Recorded talks and digital posters can become available for asynchronous consumption after the conference, fostering ongoing interactions between participants and promoting new collaborations. With presenter approval, all presentations can be archived online, offering wider exposure with the option to be published with a DOI.

5.6 Press Conferences

The vAGM 2025 could incorporate a virtual press conference on noteworthy papers and results (the CASCA community is not large enough for media to attend an in person AGM, so this is an opportunity unique to the vAGM 2025). Additional exposure for Canadian science is important and a virtual AGM presents an opportunity to expand on the visibility of Canadian astronomy.

5.7 Financial Support

The vAGM 2025 would have vastly lower costs than an in person AGM, which means that registration fees could be repurposed to support the virtual attendance of disadvantaged members.

6 Summary

The proposal to hold vAGM 2025 should be considered in light of its advantages, and in careful and thoughtful consideration of its challenges and potential disadvantages. Advantages include the strong potential to enhance equity, accessibility, and inclusion; reduction of the climate and environmental impacts of CASCA professional activities; the potential to improve digital legacy products; and much lower costs. Challenges surround the need to provide networking opportunities and a sense of community for

early-career researchers, especially graduate students, and difficulties in maintaining engagement and providing a rewarding experience through the virtual format. However, there is now a burgeoning literature on virtual meetings including deep research and best practices. Virtual platforms and technological solutions continue to evolve. We have provided a prototype vAGM 2025 proposal that acknowledges and begins addressing the community concerns raised so far, along with others discussed in the literature. This report is intended to evolve, and we actively seek ideas and input from the CASCA community to incorporate in it as we prepare for vAGM 2025. **We therefore recommend that CASCA adopt the vAGM 2025 proposal, establish an organizing committee, and closely monitor the outcome.**

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Time (Pacific)	Time (NL)	Monday	Tuesday	Wednesday	Thursday	Friday	
8:00	12:30	Welcome	Coffee	Coffee	Coffee	Coffee	
8:15	12:45		Posters	Posters	Posters	Posters	
8:30	1:00	Martin Award	R. M. Petrie Prize	Plaskett Medal	Qilak Prize	Richer Gold Medal	
8:45	1:15						
9:00	1:30						
9:15	1:45	Break/ Lunch	Break/ Lunch TOWNHALL A	Break/ Lunch	Break/ Lunch TOWNHALL C	Break/ Lunch	
9:30	2:00						
9:45	2:15	Science Talks		Science Talks		Science Talks	
10:00	2:30						
10:15	2:45		Science Talks		Science Talks		
10:30	3:00						
10:45	3:15	Break		Break		Break	
11:00	3:30	Poster Session		Poster Session		Business Meeting	
11:15	3:45		Break		Break		
11:30	4:00	Break	Poster Session	Break	Poster Session		
11:45	4:15	Science Talks		Science Talks			
12:00	4:30		Break/ Lunch		Break/ Lunch		
12:15	4:45						
12:30	5:00	Break/ Lunch	Science Talks	Break/ Lunch TOWNHALL B	Science Talks	Break/ Lunch TOWNHALL D	
12:45	5:15						
1:00	5:30	SESSION 1					
1:15	5:45		Break		Break		
1:30	6:00		SESSION 2	SESSION 3	SESSION 4	Poster Awards, Ending	
1:45	6:15	Poster Session					
2:00	6:30						
							Total time (hr):
Total session time (hr):		4.75	4	4	4	4	20.75
Optional session time (hr):			1	1	1	1	4
Total break time (hr):		1.5	1.25	1.25	1.25	1.25	6.5

Figure 1: An example of a draft schedule of a vAGM, which incorporates the foundational components of an AGM in a schedule tailored to the capabilities and limitations of virtual meetings.