HECTOR
Galaxy Survey

Hector Galaxy Survey Team Policy

Introduction

This document defines the membership and publication policy of the Hector Galaxy survey collaboration. This membership policy covers projects, analyses, presentations, proposals, publications and the use of all non-public data associated with the Hector survey. This includes all non-public raw Hector spectral data, any non-public processed Hector data and any unpublished interpretations derived from that data. Likewise, this policy covers all the non-public target selection discussions and algorithms, any non-public targeting data and unpublished interpretations derived from that data. This policy covers all publications, including journals, conference proceedings, technical reports and popular articles, as well as all presentations and proposals on the Hector survey (in whole or in part).

We would like to acknowledge the traditional owners of the land on which the AAT stands, the Gamilaraay people, and pay our respects to elders past and present.

Acknowledging use of Hector data

Hector papers should contain the following acknowledgement:

> *The Hector Galaxy Survey is based on observations made at the Anglo-Australian Telescope. The Hector multi-object integral field spectrograph instrument was developed jointly by the University of Sydney and Macquarie University, with additional financial contributions from the Australian National University and University of Western Australia. The Hector input catalogue is based on data taken from the WAVES Survey, Sloan Digital Sky Survey and the GAMA Survey. The Hector Galaxy Survey research is supported by the Australian Research Council Centre of Excellence for All Sky Astrophysics in 3 Dimensions (ASTRO3D), through project number CE170100013, and other participating institutions. The Hector Galaxy Survey website is* To be updated soon, once the new site is online].

Team membership

The initial membership of the Hector collaboration was set in 2018A from responses to a call to the Australian astronomical community and engagement in Hector activities. The list of team members is described on the Hector survey team wiki. This list will be finalised at the date of the first observing proposal. Active team members at that date will be listed on the proposal and considered Full team members. Researchers who have expressed an interest in being on the Hector team but have not contributed to Hector through engagement in the instrument, science or survey preparation, will then be considered associate team members.

New members can join the team either as full or associate members. In either case new members need to be proposed by a current full team member and need to propose a specific science project that they intend to focus on. In the case of a full team member the proposal should also outline the expected contribution to the overall survey. Requests for membership should be forwarded to the team leader. Approval of new team members is by the Hector Executive Committee (Hector Exec).

Full team members

Full team members have unlimited access to the Hector data and related products and may propose any science project using the data, taking into account previously proposed projects. By being members they are agreeing to abide by the policies described in this document. They have rights to be involved in any science project to which they can make a significant contribution. Full team members may request authorship on Hector papers on the basis of either their direct contribution to that work, or their overall contribution to the project. There is an expectation that full team members contribute meaningfully to the ongoing effort of the project. This ongoing effort may be via involvement in target selection, observing, software development, data reduction, generation of simulations or any other effort that aids the survey. Full team members who have not contributed to the Survey effort or used survey data for 2 years will be contacted by the Exec. to discuss a defined project that would allow them to be moved to the Associate membership class. If no project can be found that fits within an Associate membership then their Hector team membership will lapse.

Associate team members

Individuals may be associate team members for either of two specific reasons:
(A) to carry out a specific project/analysis generally leading to a paper, which is not currently being undertaken by the team. These Associate members will have access to Hector data and related products for their specific proposed project and will be authors (often first author) on the papers arising from their project. They do not have access to the data for other projects and do not have rights to be authors on papers unrelated to their proposed project.
(B) they provide a specific product or effort to the survey team, but are not directly involved with the main survey science. In this case in return for the effort/product in question these associate members are eligible to be authors on 'core' survey papers as defined below, or papers in which their products/efforts are directly used. If the product is essential to the Survey (not just a beneficial addition) then Full membership would be more appropriate.

Associate team members who have not contributed to the Survey effort or used Survey data for 2 years will be removed from Associate membership (after consultation between the member and the Exec).

Instrument team builders

These are individuals who were essential to the building of the original instrument and for whom it formed at least 50% of their time for 1 year or more, or for whom their contribution can be justified as essential to establishing funding. They will have authorship rights according to the policy below. Some Instrument team builders will also be Full or Associate team members if they go on to engage with the survey science. Instrument Builders will have rights to be on the “core” papers as well as the first 10 non-core publications using Hector data. At the start of the Survey all Instrument team builders who expect to engage with the Science Survey will be considered Founders (see below).

Founder Status

A team member who has contributed a substantial enabling effort towards the survey (as assessed by the Hector Exec, but nominally based on minimum of 6 months equivalent full-time effort, subject to opportunity) and aims to engage with the Science Survey going forward, will qualify for Founder status. Such effort includes work on instrumentation, software, simulations, observing and any other development that can be considered to have contributed to enabling the Survey for the whole team. A list of current team members with Founder status will be maintained on the Hector wiki. A team member who wishes to have Founder status should contact the survey Principal Investigator with a brief justification of their case. Decisions on Founder status will then be made by the Hector Executive Committee.

Founder status will be recognised on the Hector public website with descriptions of contributions. Founders applying for jobs/grants can then point to that web site as proof of their pinnacle role in papers they have co-authorship rights on.

In order to maintain Founder status a genuine continued contribution to the Survey effort is required. Such a contribution does not include using data only for their own science, but does include, for example, significant observing load, updates to data reduction pipelines, producing data products for the whole team and maintaining them, management or coordination roles or other contributions that assist the science of the Hector team. An indicative contribution would be a minimum of 4 weeks (20 days) FTE equivalent per year (subject to opportunity) but this is not a strict time limit. Observing nights are counted towards this total as individual days, not based on work hours. A minimum number of 3 observing nights in a row is required for observing to be included in the founder status tally, and then it counts as the number of observing nights plus 2. For example, a 5 night observing run is the equivalent of 7 days of contribution. If the Exec has concerns that a Founder is no longer engaged at this level then the Exec will first discuss the ongoing engagement with the Founder member. The Exec will then make a decision on continuing Founder status. In cases where the Founder has moved on and has no part in the Hector Survey, they will be removed from Founder status.

A team member with Founder status is able to be a co-author on any Hector survey paper or related publication. They must however have read the paper **and** provided comments on the paper to the author or given reasonable justification for not providing comments to the author (e.g. on leave at the paper review time).

Requesting team membership

Requests for full team membership should be made if there will be continued significant involvement in the project. There is an expectation that new full team members will either be (i) students/ECRs supervised/mentored by a current full team member, or (ii) a researcher bringing a substantial new data product, tool or methodology which would otherwise be unavailable to the team.

Full team member requests should address the following points:

- An outline of their key science interests with respect to the Hector Galaxy Survey, ideally defined as one or more specific papers. There should be enough information for the Exec to be able to confirm that there are no conflicts with other Hector science projects already approved.
- The expected contribution to ongoing survey effort. This can cover any area that contributes to the project as a whole, including software development (e.g. data reduction and analysis), target selection, observing, database, simulations, theory. Any unique data product or tool/methodology that is being brought into the collaboration should also be discussed here.
- The amount of effort expected to be committed to the project over the lifetime of the survey. Also please list other commitments (e.g. part-time position, teaching, observatory duties, other non-research responsibilities).

Associate membership requests need only address either point 1 or 2 above, depending on the specific type of associate membership requested (type A or B above).

Membership proposals should clearly state which class of membership is being requested and also the name of the current team member acting as sponsor/mentor, if applicable. Membership requests should be limited to a single page and sent to the Principal Investigator who will then present the requests to the Hector Exec.

Membership for students

It is expected that students involved in Hector research projects will also be official team members (either full or associate), just as any other researchers are. However, this is not required for short term (in

particular undergraduate) research projects, where there is no immediate expectation of publication. In this situation, the student's supervisor is responsible for arranging data access and making sure that the student abides by the policies of the team.

Key roles and structures

Project Leader (Principal Investigator)
Overall leadership of the project; Chair of Executive Committee: Julia Bryant

Senior advisor
To offer overall strategic direction: Joss Bland-Hawthorn

Science Coordinator
Management and coordination of papers; primary contact for new science proposals: Scott Croom

Simulations coordinators
Proactively manage the access of simulations relevant to the Hector ream and actively source simulations requested by Hector science team members: Claudia Lagos, Charlotte Welker

Target selection coordinator
Manage the construction and maintenance of the input catalogue, tiling of targets and progress of fields observed: Sam Vaughan

Data Reduction coordinator: Nic Scott, Sree Oh

Database coordinator and quality control: TBD
Observer logistics
Manage the timetabling of observers for observing runs, and ensuring all observers have the required training: Sree Oh for coordination and Julia Bryant for training.

Website/wiki Coordinator
Manage the information on the Hector website including interaction with Data Central on automated data delivery, manage mailing lists and membership : Tania Barone, Marie Partridge

Hector Science team leaders

Coordinate Hector science efforts on each theme, actively identifying conflicts between member projects and presenting those conflicts to the Exec, and actively identifying key science that should be a priority for completion by the Hector team, organising regular meetings with these science theme members.

- **Stellar populations & kinematics:** Jesse van de Sande & Nic Scott
- **Gas kinematics:** Julia Bryant
- **Emission line processes:** Brent Groves
- **Radio/HI connections:** Luca Cortese & Barbara Catinella
- **Environments/halos:** Matt Owers
- **Dark matter:** Celine Boehm

Hector Executive Committee

Hector Exec consists of the Project Leader, Science Coordinator, key strategic advisors and selected team members for whom Hector will be their major science project. If required, the Hector Exec will resolve any conflicts that cannot be resolved by the full team. If the Hector Exec cannot resolve the dispute, then the Project Leader may make the final decision.

The role of the Hector Exec is to provide high level scientific guidance for the survey; monitor progress by the various working groups and resolve any conflicts within the team.

Project Review Committee

This committee is a small sub-set of the Executive committee. The Project Review committee reviews proposed papers/projects as described below.

Hector survey projects and papers

The Hector projects and paper policies are outlined below. Any disputes will be managed by the Hector Exec (see above).

New potential science projects must be submitted via the Hector wiki. The included project description will be made public to the full team via email and the website. The proposed project will be reviewed by the science coordinator and a small group of other Hector team members (the Project Review Committee) to review any potential conflicts with other projects. Other team members who perceive a conflict may also raise the issue with the science coordinator and the researcher proposing the new project. The Project Review Committee may require changes to the description and scope of the project before approving it. Only approved projects may continue towards publication.

Project summaries must contain a detailed description of the project and a description of the publication(s) that will result from the project, with lead authors for each paper identified. Where possible, members should post individual project summaries for each anticipated publication. To avoid conflicts, the summary should be focused on specific research with well-defined goals. Large projects with more than one expected paper (such as thesis projects) should contain detailed descriptions of each paper anticipated from the project with the lead authors identified.

Thesis project summaries must contain a detailed description of the project, the publications that will result from the thesis, and a thesis timeline for the project. The student should be identified in the project summary and should be a member of the Hector team.

The full team is encouraged to read all new project descriptions and bring up any conflicts with existing projects for discussion with project proposers and the Science Coordinator.

Project priority periods define the amount of time from initiation of the project to first draft of the paper. Regular team members have a priority period of 1 year. PhD students may request an extended priority period of up to 2 years. The science coordinator is responsible for identifying projects that are not progressing. The priority periods ensure that key Hector science papers will be completed by Hector team members prior to public data release. If an approved paper on the wiki does not progress after 1 year or have a draft paper by 2 years then the project will remain an approved project but other researchers can then apply to the Exec to do that research paper instead. An exception is given for students in which a set of papers have been defined at the start of the PhD, in which case there must be progress on the science that drives that set of papers, even if there is not progress on the last papers in that set within these time limits.

Progress reports will be requested by the Science Coordinator for inclusion in the Hector newsletter to be circulated to the Hector team. Project leaders and PhD students are encouraged to provide progress reports for the newsletter to keep the team informed of project discoveries and timescale for publication.

Participation and Authorship

Any full member of the team may request participation on any project. Involvement is at the discretion of the lead author on the given project, but any reasonable offer to collaborate should be accepted.

Authorship: There are no requirements to include anyone as a co-author by default, beyond the standard scientific practice of including those that have actively worked on the paper and those that have provided a data product that has been used in the paper. However, in addition the following people have a right to request co-authorship:

- Any full team member who has significantly contributed to the production of the particular data used in the paper. This includes team members who have produced particular team data products (including value-added data products) that are used in the paper.
- Any team member with Founder status.
- Any full team member that has provided substantial feedback on the paper (i.e. more than just pointing out typos).

The lead author has the right to decide on the ordering of the author list, based on the usual two-tier list of those who make direct contributions to the paper (in order of contribution), followed by those how have contributed to the broader survey and have requested authorship (in alphabetical order).
All team members requesting authorship (including Founders) are expected to read the paper, approve of its content and have provided feedback comments. Team members who do not do this may be removed from the author list.

Core papers: In addition to the above, there will be a small number of "core" survey papers, which will describe key aspects of the survey (e.g. data reduction paper, sample definition paper). In addition to the authorship policy given above, a request for co-authorship on a core paper may be made in the case of:

- Any full team member who has made a meaningful contribution to the effort of the survey, even if below the threshold for Founder status.

The primary aim of the core papers policy is to recognize and reward effort at a range of levels in the survey.

Paper Process

Titles: Hector Galaxy Survey paper titles should take the form "The Hector Galaxy Survey: ….." e.g. “The Hector Galaxy Survey: Target Selection”, in order to ensure maximum publicity and brand recognition for survey papers.

Draft paper posting: draft papers should be posted to the team wiki as early as possible to inform the collaboration of the progress of the project. When the paper is nominally complete it should be posted to the wiki and an email sent to the team to allow feedback/comment from the rest of the team.

Feedback period: The authors must allow a minimum of 3 weeks for feedback from the rest of the team before submission.

ArXiv posting: Hector survey default policy is that papers must be accepted before being submitted to arXiv. This policy may be over-ruled in exceptional circumstances with the agreement of the team.

Assumed cosmology: To aid comparison between results Hector papers should, where possible, use the same assumed cosmology. $\Omega m=0.3$, $\Omega\lambda=0.7$ and $H_0=70$km/s/Mpc. These should be clearly stated at the end of the introduction of the paper. In addition, if you show the H_0 dependence explicitly with factors of h (e.g. Mpc/h), making the definition of h clear (e.g. $H_0 = 100$ h km/s/Mpc).

Citing instrument and survey definition papers: Each Hector paper should cite the appropriate instrument and survey definition papers. These will be listed on the Hector wiki and updated as the papers are published.

Papers that use derived higher-level data products should also cite the relevant papers describing these.

Example text for the instrument description that can be modified for use in papers:
The Hector Integral field spectrograph instrument (Bryant et al. [ref TBD]) is mounted at the 2-degree diameter field of view focus on the Anglo-Australian. Hector uses 21 fused fibre bundles (Hexabundles; Brown et al. [ref TBD], Wang et al. [ref TBD], Bland-Hawthorn et al. 2011; Bryant et al. 2014) with a high

(75%) fill factor. Two 37-core hexabundles are allocated to secondary standard stars. Each galaxy bundle contains between 61-169 fibres of 1.6 arcsec diameter resulting in each IFU having a diameter of 15-27 arcsec. The IFUs are attached to robotically configured magnets across the field plate. While one plate observes, the second field plate is being configured by the robot. Hector fibres are fed to both the Hector spectrograph (841] fibres) and the double-beam AAOmega spectrograph (819 fibres; Sharp et al. 2006). The Hector spectrograph has a fixed format with an instrumental spectral resolution of at 0.13 nm from 372.7-776.1 nm with 2+/-0.2 pixel FWHM spectral sampling. AAOmega allows a range of different resolutions and wavelength ranges. For the Hector Galaxy survey we use the 570V grating at 3700-5700A giving a resolution of R=1805 ($FWHM_{blue}$ = 2.66 Å, sigma~70 km s^{-1}), and the R1000 grating from 6250-7350A giving a resolution of R=4308 ($FWHM_{red}$ = 1.59 Å, sigma~30 km s^{-1}, Scott et al. 2018, van de Sande et al. 2017).

Hector follow-up projects and proposals

Any team member may submit follow-up telescope proposals based on discoveries from the Hector Galaxy Survey data. These do not need to be approved by the Hector Exec, but they should be advertised to the Hector team via the full team email exploder prior to submission of the proposal, so that others can collaborate on the project if interested. A brief description of the proposal and a final copy of the full proposal should be placed on the Hector wiki page for follow-up proposals.
If the project was initiated based on proprietary Hector Galaxy Survey data then publications based on the data should also follow the publication rules described in this policy document, as well as any other rules appropriate to new data.