

Procedures for Obtaining Membership in After SDSS-4

Approved by the ARC Board of Governors May 15, 2017

This document outlines operating rules and procedures for institutional membership in the After SDSS-4 (AS4) project. These rules are being proposed by the AS4 Steering Committee for approval by the ARC Board of Governors. They govern the AS4 proto-collaboration for which seed fund contributions are being solicited, and the intention is that they will be incorporated into the AS4 Principles of Operation.

After the initial AS4 collaboration has formed on the basis of the Principles of Operation, the Steering Committee's responsibilities will be transferred to the Advisory Council (AC), a body with representation from the institutional partners. After that point, changes to the Principles of Operation can be recommended by the Advisory Council for approval by the ARC Board of Governors.

AS4 is planned as a five-year survey, with observations beginning in July 2020 and ending in June 2025. The project will continue after the end of observations to finish data processing and archiving. AS4 will execute an all-sky time-domain spectroscopic survey of Milky Way stars and of quasars and galaxies and is planning high physical resolution integral field spectroscopy of nearby galaxies. Observations would be conducted from both Apache Point Observatory and Las Campanas Observatory, with new robotic fiber positioners and existing and new spectrographs. These programs are described in the AS4 Executive Summary document.

Participation in AS4 includes the entirety of the project. Hence, membership in AS4 provides institutions with access to all of the data, even if particular institutions or individuals confine their interests to a limited subset of the surveys.

Membership in AS4

Membership in AS4 is open to individual institutions. Benefits of membership include proprietary access to AS4 data as well as the ability to participate actively in survey planning.

A Participant at an AS4 institution is understood to be a long-term scientific staff member -- e.g. faculty (tenured and non-tenured), research-track scientist, or equivalent. In all cases, an individual Participant, postdoc, or other staff member is considered to be "at an institution" if at least 50% of his or her salary is paid by the institution.

Full Institutional Membership includes proprietary data rights for an unlimited number of Participants from the institution, and these Participants may sponsor an unlimited number of postdocs or other short-term staff from the institution and an unlimited number of graduate and undergraduate students enrolled at the institution. Full Membership requires a total contribution of \$1150K. In most cases this membership fee will be paid in annual installments over the lifetime of the project (see below), with details spelled out in the MOU between ARC and the institution. All partners are encouraged to join as Full members.

To accommodate institutions that cannot commit to a Full membership, Associate Institutional Membership includes proprietary data rights for a specified number of Slots, where the cost-per-Slot is set to one-fifth of the cost of a Full membership, i.e. \$230K. Typically a Slot will cover one Participant and one postdoctoral researcher sponsored by the Participant, but this balance may be negotiated in

specific cases. The Participants and postdocs at an Associate Member Institution are named rather than pooled. Participation rights can be moved from one researcher to another with the consent of the Director; the Director (and AC if necessary) has the authority to limit over-use of this flexibility. Participants may sponsor graduate and undergraduate students at their institutions who are working under their supervision, and they may also sponsor individuals employed by their institution who are within three years of their first bachelor degree (e.g., individuals working for a year before going to graduate school or masters students). In addition to these sponsored individuals, postdocs and other professionals whose salary is paid in part or in full by AS4, or whose work is counted as an in-kind contribution, will also have data-access and other participatory privileges so long as they are spending the majority of their time on an activity acknowledged by AS4 to be of general service to the project. A minimum of three Slots is required for an Associate Member Institution to have a vote on the AC, to have a representative on the Collaboration Council (CoCo). However, an institution may join with one or two Slots.

Associate Member institutions may associate themselves together into Participation Groups (PGs) with the approval of the Director and the SC (or AC when it is formed). MOUs will be signed independently with each institution. Designation of a PG with three or more Slots total will allow the PG as a whole to have a single vote on the AC. Note that the price incentives associated with Participation Groups in previous SDSS phases are not being continued in AS4.

Other collaborative buy-in arrangements will be considered on a case-by-case basis if there are compelling and mutually beneficial reasons to do so. Membership in AS4 is recommended by the Steering Committee (replaced by the Advisory Council when that body forms) to the ARC Board of Governors. One criterion for membership is a tangible contribution to the construction or operating needs of AS4, as described below. Membership is formalized through Memoranda of Understanding (MOUs) between the institutions and ARC defining the contributions and the scientific participation, and agreeing to the Principles of Operation.

Our intent is to maintain the joining policies announced at this stage, including the contribution levels for members, without change into the Principles of Operation, as has happened in previous phases of SDSS. However, the possibility exists for them to be adjusted, with approval of the SC (or AC when it is formed) and the ARC Board of Governors, depending on the number of partners recruited and the success of other fund-raising efforts.

Contributions to AS4

AS4 member contributions for a full institution will total \$1,150,000, intended to be paid according to the following schedule of seven payments. The initial signing payment of \$180,000 is due by June 30, 2018. Seed contributions can be used towards this initial payment. Subsequent annual payments will be \$170,000 due by October 31 of 2019, and five payments of \$160,000 due by October 31 of 2020, 2021, 2022, 2023, and 2024. For Associate Institutional Members or Participation Groups, all payments will be scaled by factor of 1/5 per Slot, as described above.

Contributions can be cash or in-kind and are measured in US dollars. All in-kind contributions need to specifically address items in the Director's budget and must have prior approval by the Management Committee (MC) and the AC. All such details, including the schedule and value of in-kind contributions, will be elaborated in the institutional MOU with ARC. Only direct costs will be counted as in-kind contributions (i.e., including fringe benefits but excluding institutional overheads). Hardware and

software developed previously for SDSS-I, -II, -III, or -IV will generally not be counted as an in-kind contribution for AS4.

Each institution's MOU will define the penalties should the institution fail to fulfill a promised payment. Typically the penalty will be that the institution will forfeit their rights to data taken after the due date of the payment that is in default. Specific situations will be dealt with if and when they arise by the Director, the MC, and the AC.

Recognizing the importance of early funding to AS4 preparation and the greater risk attached to earlier ("seed") contributions, we have established an incentive system for contributions prior to June 30, 2018:

Contributions made before May 31, 2017: *Every* \$10K of seed money contributed gets \$10K of bonus credit and earns the opportunity to contribute an additional \$10K of money before June 30, 2018 to earn an additional \$6K of bonus credit.

Contributions made between June 1, 2017 and Aug 31, 2017: *Every* \$10K of seed money contributed during this period gets \$6K of bonus credit and earns the opportunity to contribute another \$10K before June 30, 2018 to earn another \$4K of bonus credit.

Contributions made between Sept 1, 2017 and June 30, 2018: New contributions during this period earn 20% bonus credit. This cannot be combined with previous credits.

A table of examples is appended. All contributions received before June 30, 2018, as well as the associated bonus credit, can be applied to the initial signing payment. Additional contributions and bonus credits beyond that amount will reduce the first four annual payments (starting Oct 2019) by an evenly distributed amount.

Seed funding contributions cannot be returned to the institution except under condition that AS4 is cancelled before the start of operations. In that case, the remaining balance of the seed funding cash will be returned on a prorated basis, in proportion to the amount of cash contributed, after the final AS4 expenses are paid. This return excludes any bonus credit or in-kind contributions.

If an incentive is offered to join AS4 and SDSS-IV together, the seed funding incentive described here cannot be combined with that incentive. An institution may take advantage of one or the other, but not both.

It is ARC policy that all work packages negotiated for support of the SDSS projects (e.g., in which ARC provides funds for hardware or software development or operations support at one of the Member Institutions) require a waiver of overhead rates, with the sole exception of operations at Apache Point Observatory. This policy, of having institutions where work is done carrying the burden of the IDC costs, has been a critical factor in obtaining support for SDSS from funding agencies, foundations, and institutions. The AS4 project will continue to operate under this policy.

Governance in AS4

Full Institutional Members and Associate Institutional Members with at least three Participants, or Participation Groups with at least three Participants, each have equal representation and voting rights on the AC and the CoCo (i.e., one vote per entity). Official project acknowledgements will contain a list of Full Institutional Members and a list of Associate Institutional Members. Participation Groups may request to be listed as a Participation Group, in lieu of listing each individual institution.

Examples of Bonus Credits from Seed Money Contributions

Type	Contribution Date	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Cash:	Before 5/31/17	50			50	25	25
	6/1/17 – 8/31/17		60			25	25
	9/1/17 – 6/30/18	50	60	150	250	50	30
Credit:	Before 5/31/17	50			50	25	25
	6/1/17 – 8/31/17		36			15	15
	9/1/17 – 6/30/18	30	24	30	70	25	17
Cash:	Total	100	120	150	300	100	80
Credit:	Total	80	60	30	120	65	57

Cases 1-3 show the effects of varying the date of the seed money contribution, including the optional matching amount in cases 1 & 2. All of these examples produce the \$180K contribution for full institutional membership required by June 30, 2018.

Case 4 is an example in which an additional \$200K of contribution is made beyond the matching amount; the \$250K payment earns 60% on the first \$50K and 20% on the remaining \$200K.

Case 5 is an example in which seed money is paid in both periods 1 and 2, fully matched in the third period.

Case 6 is a similar example, but without full matching; the \$30K payment is split into \$25K matching at the more favorable 60% rate, and \$5K matching at the less favorable 40% rate.