

# XC-S application form

This application form is for the large-scale execution category of XC50 (XC-S). You cannot use it for applications in normal categories (XC-A, XC-B, XC-MD, XC-Trial).

## 1 Significance and objective of you research

Describe the significance and objective of your research. Clarify the background, scientific goal, and originality of your approach. When you cite references, include (embed) the bibliographic information in the text. This is all the same in the following sections. Example of citations: “There are several TNOs with perihelion distance greater than 45 au that have clearly experienced planetary scattering (Bannister et al. 2017, AJ, 153, 262).” You may also use the number reference system (i.e. inline citation is numbered as [1] or [2, 4]), and all reference sources are listed somewhere in p. 1–3. The L<sup>A</sup>T<sub>E</sub>X version of the application file allows you to use B<sub>I</sub>B<sub>T</sub>E<sub>X</sub> for this purpose. Follow the instructions in the file `00README.txt` (but you must prepare your own environment for B<sub>I</sub>B<sub>T</sub>E<sub>X</sub>). Be sure that the amount of information in each section does not exceed the page limit.

(The amount of description should not exceed one page)

## 2 Research plan and methods

Summarize your research plan and methods here. Describe the specific outcomes that you expect to achieve during this fiscal year (ending in March). If there are any new or unique perspectives on your research methods, specify them as well. The format of the citation must follow the instruction specified in Section 1.

(The amount of description should not exceed one page)

### **3 Preparation of computational code**

(§3.1 and §3.2 combined, do not exceed one page.)

#### **3.1 Development and optimization of computational codes**

Describe the current status of the development and optimization of your numerical code. If you are a former user of the computers at CfCA, you need to clarify that the numerical code is expected to run efficiently on this system by showing the scalability of the code. Particularly when you apply for XC-A or XC-S, you need to show the scalability at least up to 1,000 cores. The format of the citation must follow the instruction specified in Section 1.

#### **3.2 Estimate of the amount of required computing resources**

Describe the estimated amount of computing resources required to carry out your proposal (number of nodes, number of CPU cores, amount of memory, the time required for one model calculation, the total calculation time for all the model calculations, etc.).

(The amount of description should not exceed one page)

## 4 Research results you have achieved so far

If you have previous experience of using CfCA’s open-use computational facilities, list the publications resulting from the activity.

- List only the publications of **your own research results**. Do not bring references from other people’s research that you cited in Sections 1, 2, or 3.
- List separately the results you have obtained primarily through the use of CfCA’s open-use computing facilities (Section 4.1) and those obtained through the use of computing facilities at other institutions (Section 4.2).
- Provide as much detail as possible on the bibliographic information in the literature. Do not abbreviate the volume number or page numbers.
- Include the specific names of the equipment and resources you used.
- The applicant’s name should be written in bold in the list of authors.
- Use “et al.” or other abbreviations as appropriate when there are many authors.

Here are some examples.

### 4.1 Publications achieved through the use of CfCA’s facilities

- **Iwasaki, K.**, Tomida, K., Inoue, T., Inutsuka, S. (2019) The early stage of molecular cloud formation by compression of two-phase atomic gases. *The Astrophysical Journal*, volume 873, 6. (XC30, XC50)
- Takasao, S., Tomida, K., **Iwasaki, K.**, Suzuki, T. K. (2019) Giant protostellar flares: Accretion-driven accumulation and reconnection-driven ejection of magnetic flux in protostars. *The Astrophysical Journal*, volume 878, L10. (XC30, XC50)
- Tsukamoto, Y., **Iwasaki, K.**, et al. (2015) Bimodality of circumstellar disk evolution induced by the hall current. *The Astrophysical Journal*, volume 810, L26. (XC30)

### 4.2 Publications achieved through the use of other facilities

- **Iwasaki, K.** (2015) Minimizing dispersive errors in smoothed particle magnetohydrodynamics for strongly magnetized medium. *Journal of Computational Physics*, volume 302, 359. (JCAHPC/Oakforest-PACS)

(The amount of description should not exceed one page)

## 5 The date when you wish to run your jobs

Indicate the dates on which you want to carry out the simulations if this application is adopted.

(The amount of description should not exceed one page)