

A&A language guide for authors

The aim of this guide is to help you meet A&A standards when you are preparing your paper and to understand the stylistic and grammatical changes that language editors may make to your paper.

General tips:

- Papers should generally be organized as follows: title, abstract, introduction, methods, discussion, results, and conclusion.
- When writing your abstract, it is recommended that you follow the traditional abstract layout of context, aims, methods, results, and conclusions even if you choose not to use the headings. References are not permitted in the abstract.
- “Brevity is the soul of wit”: Long sentences are often unclear and are more likely to include grammar mistakes, so favor using shorter, simpler sentence structures.
- Whenever possible, write in the active voice. Writing in the passive voice (“the results were normalized by introducing...”) often leads to awkward and unnecessarily long sentences, and such sentences are often ambiguous (Was this a step you took as part of your study? Is this something the software you used systematically does? Did a third party do it prior to your study?).
- Consistency is key: stick to either US or UK spellings, use acronyms systematically after they are introduced, and homogenize hyphenation usage (e.g., if you use “high-mass planet” also use “lower-mass planet” or “intermediate-mass planet.”).
- Avoid beginning a sentence with an acronym, a number, a formula, or a symbol.
- Use bulleted lists sparingly.
- Avoid long and numerous footnotes and parenthetical asides.
- Avoid single-sentence paragraphs.
- Favor paraphrasing instead of using direct quotes.
- Do not use seasons (e.g., summer and winter) since they differ between the northern and southern hemispheres.
- Avoid wordplay and cultural references.

Tips for shortening your paper:

- Introductions and conclusions can be short. Avoid regurgitating information from the introduction in the conclusion. Bullet points can be used in the conclusion to list main takeaways.
- Avoid excessive referencing. A general rule is five references maximum for a specific subject, e.g., “Supernova studies have made significant progress in recent years (e.g., ref 1, ref 2, ref. 3, ref. 4, ref. 5)”.
- Figure captions: Try to keep descriptions as brief as possible. For example, “The results from our study are shown as red lines, while the results from XXX are denoted with blue lines.” → “We show our results (red lines) and the XXX results (blue).” In titles, words like “List of” or “Plot of” are usually unnecessary. For similar figures, favor using titles such as “Same as Fig. 1 but for XXX.”
- Do not repeat descriptions of figure images in the main text (e.g., the meaning of different symbols or colors). For example: “The red line in Fig. 8, which represents the velocity results from XXX, is clearly below the black line, which represents our results.” → Figure 8 shows that our velocity results are lower than those of XXX.”

In-house style rules:

Acronyms and abbreviations - All acronyms and abbreviations should be spelled out upon first appearance in the abstract and then again beginning with the introduction (though instrument acronyms do not need to be introduced in the abstract). Thereafter, the acronym should be used unless it is at the beginning of a sentence. If a term only appears a single time in a paper, write out the term and do not introduce the

acronym. Acronyms should not be introduced in footnotes, parenthetical asides, or figure captions. For example, instead of “There are numerous types of instabilities at play (e.g., the magnetorotational instability, MRI)” you can write “There are numerous types of instabilities at play, for example the magnetorotational instability (MRI).”

Titles - Only the first word of a title and subtitle and any proper nouns should be capitalized. This applies to the article title as well as the titles of sections, figures, and tables. Do not use acronyms (other than instrument or survey names) in article titles unless spelling out the term would make the title more than three lines long. Titles should not begin with “On the.” Papers in a series must all have exactly the same title, followed by the paper number and subtitle, for example: “Title. IV. Subtitle”

Figures and tables - Figures and tables should have short titles written in the telegraphic style (i.e., not a full sentence), without an initial article (“the,” “a,” “an”). Any following text should be written in full (but brief) sentences. For example: “Evolution of the velocity vs. mass relation as a function of distance to the star. The solid and dotted green lines show the results for objects 1 and 2, respectively.” If individual panels are described, this is repeated (i.e., a title for the panel, with any further description written in full sentences).

Tense - A&A uses the past tense to describe specific methods and steps used in a study and the present tense to describe general methods as well as findings, including the results of recent papers (within the past ten years). For example, “We extracted the data...” “The velocity increases outside....” “This software automatically labels...” Please note that the present perfect (“We have extracted”) should not be used to describe steps. See Appendix A for more examples.

US versus UK - Papers can be written following either US or UK English conventions, and use should be consistent throughout the paper. Refer to the Merriam-Webster dictionary for US spellings and Cambridge for UK spellings. See Appendix B for a nonexhaustive list of the differences between the two conventions.

What should and should not be capitalized?

- ✓ Proper nouns and terms derived from proper nouns (e.g., “Gaussian” “non-Keplerian”).
- ✓ Instrument and survey names
- ✓ Earth, Moon, Milky Way, Solar System
- ✓ Galaxy or Galactic when referring to the Milky Way
- ✓ The first words of titles and subtitles

- X Cardinal directions (e.g., north and south)
- X Names of methods
- X Acronym definitions: “active galactic nuclei (AGNs),” and not “Active Galactic Nuclei (AGNs)”

Commas - Use the serial comma (also known as the Oxford comma) when listing three or more items (“models a, b, and c”), and use commas between two independent clauses (“The Sun is yellow, and the Earth is blue and green” but “We set the bin size to 20 and reran the simulation.”). Commas should also typically be used after introductory statements of four or more words at the beginning of a sentence (“In the first of our three models, the velocity was...”).

Date format - The date format in a paper must be consistent (for example, either 10 September 2024 or September 10, 2024, is fine, but you should not use both). To avoid ambiguity between UK and US styles of dates, we ask for the month to be spelled out (so January 3, not 01/03 or 03/01). Cardinal endings should not be used (January 1, not January 1st).

Units - Write out units when not following a numeral: “A distance of 1 kpc” but “A kiloparsec-scale distance”

Symbols - Avoid using symbols as shorthand: “Discussion and conclusions” (not “Discussion & conclusions”); “approximately a few hundred examples” (not “~a few 100 examples”).

Numbers - Write out whole numbers when lower than 11 (i.e., zero to ten) and not directly used as a measurement with the unit following; numbers 11 and up should be written numerically (unless at the beginning of a sentence).

Italics - A&A does not allow the use of italics for emphasis or to indicate a special meaning. If you want to mark a special meaning of a word or phrase, you can use quotation marks the first time a word or phrase appears.

Slashes - We reserve the use of slashes to denote ratios and instrument or wavelength pairings and for use in equations. The use of "and/or" is also acceptable.

S/N - A&A uses the abbreviation “S/N” for “signal-to-noise ratio” to avoid confusion with supernova remnant (SNR).

Equation punctuation - Equations in the main text should be punctuated as if they were phrases forming part of a sentence: “This relation can be written as XXX, where $V_{\min}$ is...” not “This relation can be written as: XXX where $V_{\min}$ is...”

That versus which - At A&A we use "that" (without a preceding comma) at the beginning of a defining clause and "which" (with a comma) at the beginning of an independent clause. For example:

- We used the XXX method, which was first introduced by...
- The data that were available at the time only covered (not “the data which were available”)
- The data, which were in fact available at the time, were not included in the study because...
- The galaxy in our dataset that contains approximately 1 trillion stars also has satellite galaxies. (i.e., there is more than one galaxy in our dataset, and the fact it has 1 trillion stars is the defining element.)
- The galaxy, which contains approximately 1 trillion stars, also has satellite galaxies. (i.e., the additional information about the 1 trillion stars is nonessential.)

Other rules

- Subsections are not permitted in the introduction.
- The word “data” is considered to be plural (“The data were extracted...”)

Common mistakes

- “allow to” (or “enable to” or “permit to” or “require to”): Instead of “The program allows to analyze the data,” you can write “The program allowed us to analyze the data” or “The program allows data to be analyzed.”
- When a noun is used in place of an adjective, it takes the singular form (“the star map” not “the stars map”).
- Certain adjectives go with certain nouns. For example, a star can have a “high mass” but not a “big mass” or a “large mass.” See Appendix C for more examples.
- Adverbs ending in “-ly” should not be followed by a hyphen: “directly measured quantities” (not “directly-measured quantities”).
- “Associated with” (not “associated to”).
- The word “such” needs an article if followed by a countable noun in the singular form: “such estimate” → “such an estimate” or “this estimate” (“such estimates are” is correct).
- For countable nouns, use “fewer” instead of “less” (“There are fewer data points” but “there is less

hydrogen”).

- “Evidence” cannot be pluralized. You can say instead, for example, “a great deal of evidence.” You also cannot say “an evidence.” You can instead say “a piece of evidence.”
- “Former” and “latter” should only be used to distinguish between two items in a clear set of two; otherwise, there is room for ambiguity and/or confusion.
- Use “can” when something is a known possibility and “may” for conjecture. “The orbital periods can be as short as 50 hours” (i.e., this has been observed) versus “The orbital periods may be as short as 50 days” (i.e., this is a supposition).

Notes

- The “Acknowledgements” section and the appendix are not reviewed by the language editors.

Appendix A: Tense use

Use the **present simple** for statements of fact and general truths, general findings from other authors, particularly recent ones (from the last ten years), general methods used in the field (not the specific steps you used in your study), and general descriptions of your results and findings, including any conclusions or descriptions of tables and figures included in the paper.

Examples:

- In the usual reduction procedure, the data are measured and flux-calibrated.
- *Herschel* images allow us to detect new YSOs.
- We find that the emission is fully nonthermal at 5 GHz.
- We illustrate the mass versus distance relation in Fig. 7.

Use the **past simple** for specific steps you took in your study, specific steps taken by other researchers, findings from studies from more than 10 years ago, or findings that have since been disproven.

Examples:

- We measured and flux-calibrated the data.
- We used the velocities to determine...
- Smith (1986) found the mass to vary as a function of...
- Smith (2022) determined the velocity to be 10 m/s, but this was later revised to...

The **present perfect** and **past perfect** are used to describe actions that occurred over an extended period of time or at an unspecified point in time, or actions that are still ongoing.

Examples:

- Astronomers have used many different methods to study the Milky Way.
- The authors had already published their paper by the time we finished ours.
- The survey has so far detected 22 YSOs.
- In this paper we have outlined our reasons for...

The **present continuous** and **past continuous** should generally be avoided unless you are describing an ongoing action in the context of a simple action.

Examples:

- We conducted our observations as night was falling.
- It was proving difficult to calibrate the instrument due to environmental effects, so we switched modes.

Use the **future** tense to describe upcoming studies or future equipment. You should not use the future to describe the outline of your paper (i.e., “In Sect. 2 we introduce” and not “In Sect. 2 we will introduce”).

Examples:

- Crab pulsar rotation periods will be further examined in a forthcoming paper.
- The SKA will provide greatly improved resolution and sensitivity.

Appendix B: UK versus US spelling and grammar

	UK conventions	US conventions
Nouns ending in our/or	behaviour, neighbour, favour, colour, harbour, vapour	behavior, neighbor, favor, color, harbor, vapor
Nouns ending in re/er	centre, metre, fibre, calibre	center, meter, fiber, caliber
Note: Words like parameter, diameter, and spectrometer always end with -er.		
Nouns ending in logue/log	catalogue, analogue, isotopologue	catalog, analog, isotopolog
Nouns ending in ize/ise/yse	analyse, summarise, organise, ionise, normalise, minimise, practise	analyze, summarize, organize, ionize, normalize, minimize, practice
Note 1: The related nouns ending in -ization/-isation also follow the convention: organisation, ionisation (UK) and organization, ionization (US). Note 2: Authors can opt to use “z” spellings in UK papers as long as use is consistent. However, “analyse” always takes an “s” in UK spelling.		
More differences in noun usage	artefact, ageing, grey, speciality, sulphur, aluminium, disc or disk	artifact, aging, gray, specialty, sulfur, aluminum, disk (not disc)
Verbs ending in -el	Model: modelling, modelled Label: labelling, labelled Cancel: cancelling, cancelled, cancellation	Model: modeling, modeled Label: labeling, labeled Cancel: canceling, canceled, cancelation
Verbs ending in -il	fulfil; fulfilling; fulfilled; fulfilment	fulfill; fulfilling; fulfilled; fulfillment
Verbs ending in -us	Focus: focussing or focusing; focussed or focused	Focus: focusing (not focussing); focused (not focussed)
-ward(s) adverbs	towards, outwards, forwards (the “s” is removed when used as an adjective, e.g., “forward modelling”)	toward, outward, forward
Quotation marks	Single quotation marks (‘’) with periods and commas coming after: This method, also known as ‘XXX’, has been used	Double quotation marks (“”) with commas and periods before: This method, also known as “XXX,” has been used
Hyphenations	Typically, words beginning with a prefix take a hyphen: non-zero, multi-wavelength, semi-major. Refer to the Cambridge dictionary when in doubt.	Typically, words beginning with a prefix do not take a hyphen: nonzero, multiwavelength, semimajor. Refer to the Merriam-Webster dictionary when in doubt. There is a hyphen when a prefix is followed by an acronym or a proper noun (non-LTE, non-Keplerian)
e.g. and i.e.	No comma: i.e. and e.g.	Followed by a comma: i.e., and e.g.,

Appendix C: Adjective-noun pairings

high or low	abundance, accuracy, adiabaticity, brightness, contrast, degree, density, energy, fraction, frequency, latitude, level, luminosity, mass, metallicity, number, percentage, precision, pressure, probability, quality, rate, redshift, resolution, speed, temperature, value, velocity
big/large or small	amplitude, diffusivity, momentum, opacity, proportion, radius, uncertainties
wide/broad or narrow	range, spread, variety
steep or shallow	gradient, slope
long or short	burst, length, period, time, timescale
tight or loose	relationship, constraint, correlation note: strong and weak can also be used in these instances
strong or weak	acceleration, anisotropy, argument, asymmetry, constraint, contrast, current, dependence, effect, evidence, magnetic field, flow, gradient, pulse, turbulence