Some Notes on Typesetting with LaTeX

Edward Brown

April 4, 2014

I am often struck by the frequency with which mathematical expressions are typeset incorrectly. Given the ready availability of typesetting programs, especially LaTeX, there is no reason to suffer shoddy typography. What follows are my notes, in no particular order, about some common errors and their remedies.

1. Above all else, **read the style guides!** Both *The Physical Review* and *The Astrophysical Journal* publish style guides. Adhere to the conventions of the discipline to which your article is addressed.

2. Symbols are in italic, including in the text. For example, write "...here $l = 1$," rather than "...here l=1."

3. Subscripts that refer to a word are usually in roman font, however. For example, write "$T_{\rm eff}$" rather than "T_{eff}" for "effective temperature." In this case one can nudge the subscript closer using a `\!` directive: compare $T_{\rm eff}$ and $T_{\rm eff}$.

4. Nuclides are also in upright font: $^{12}\mathrm{C}$ not ^{12}C.

5. Units are set in upright (roman) font, with a thin space separating them from the numerical value. In addition, a space or dot is used to separate unit symbols. For example, write "$10\,\mathrm{keV}$" rather than "$10\mathrm{keV}$" or "$10keV$". Writing "$15\,\mathrm{T\,m}$" or "$15\,\mathrm{T}\cdot\mathrm{m}$" is clearer than "$15\mathrm{Tm}$" (Teslameter or terameter?). Make it clear what symbols are in the denominator: "$10^{22}\,\mathrm{erg\,s^{-1}\,cm^{-2}}$" or "$10^{22}\,\mathrm{erg/s/cm^2}$" are preferable to "$10^{22}\,\mathrm{erg/s\,cm^2}$."

6. Don't neglect the spacing around relational operators: "$S < -9\,\mathrm{keV}$" is correctly typeset; "S<-9keV" is not. This example also highlights the difference between a minus sign and a hypen: compare $3 - 5 = 2$ (correct) with 3-5=2 (incorrect).

7. Speaking of dashes, there are four possibilities: the hyphen (-), the en-dash (–), the em-dash (—), and the minus sign ($-$).

dash	use	example
hyphen	word breaks	well-fed
en-dash	range of items	Spring is March–May
em-dash	set off a clause	"I had a cup of tea—the last decent cup..."[1]
minus	numerics	$a - b$

8. Equations are considered part of the text (imagine reading the document outloud) and are punctuated as such. For example,

   The potential Φ satisfies Poisson's equation,

   $$\nabla^2\Phi = 4\pi\rho, \tag{1}$$

   where ρ is the density...

   Note that we punctuate the equation as if it were a clause.

9. Normally avoid starting a sentence with a symbol.

10. Do not use stacked fractions for equations embedded in the text. For example, write

    The equation of hydrostatic balance,

    $$\frac{\mathrm{d}P}{\mathrm{d}r} = -\rho\frac{Gm(r)}{r^2}, \tag{2}$$

    or "The equation of hydrostatic balance, $\mathrm{d}P/\mathrm{d}r = -\rho Gm(r)/r^2$," but not "The equation of hydrostatic balance, $\frac{\mathrm{d}P}{\mathrm{d}r} = -\rho\frac{Gm(r)}{r^2}$."

[1] J. Conrad, *Heart of Darkness*