

Frank Mittelbach

`\looseness` not so loose

This paragraph was set twice in a two column multicol environment. The first time it was set without any special adjustments, the second time we used `-1` as the value for the `\looseness` parameter. Can you explain why the two paragraphs are differently broken into lines even though clearly the use of the parameter `\looseness` couldn't shorten the paragraph at all?

This paragraph was set twice in a two column multicol environment. The first time it was set without any special adjustments, the second time we used `-1` as the value for the `\looseness` parameter. Can you explain why the two paragraphs are differently broken into lines even though clearly the use of the parameter `\looseness` couldn't shorten the paragraph at all?

Answer: When `\looseness` gets a non-zero value, \TeX will always run through all paragraph passes (i.e., breaking without hyphenation, with hyphenation and (if `\emergencystretch` is non-zero as it is inside multicol) through the emergency-pass. But adding `\emergencystretch` to every line means that the line breaks chosen in the first paragraph may fall in different fitting classes so that at different places `\adjdemerits` are charged, thus making the original solution less attractive.

In fact the situation could even be worse: if a long paragraph can be broken into lines by just using `\pretolerance`, then a setting of `\looseness` to `+1` might in fact result in a paragraph with one line less—all that is required is that by breaking it using `\tolerance` we would get a default line count that would be 2 lines less than in the case with `\pretolerance` (a real life example is left to the reader).