

Delving into superconductors

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Ever since [Polywell Fusion](#) [1] caught my attention, superconducting magnets have been a large side interest of mine. I keep track of papers published in the field through [IOP Science - Superconductor Science and Technology](#) [2].

They post a list of papers every month which are freely available for personal use for the first month after publication. I will not be quoting from the papers themselves (to keep clear of infringing), but I will have a few things to say on the subject based on my reading of the papers and abstracts.

A paper from [People's Republic of China](#) [3] discusses how orienting the crystal structure of [YBCO superconductors](#) [4] can double the lifting and guidance magnetic-field-induced intensity generated by [Halbach Arrays](#) [5] in a [Maglev train](#) [6] design. [Lawrence Livermore Labs](#) [7] pioneered in this area almost 20 years ago with their design of [the Inductrack](#) [8] system. Their focus was on trains and rockets. Their plan was to accelerate a rocket horizontally to near the speed of sound before changing the direction of the system at the end of the track from horizontal to vertical. Gently of course.

Another paper also caught my eye. This one is from the [Far Eastern Branch of the Russian Academy of Sciences](#) [9] in Vladivostok. They believe they have developed a method for "inventing" high temperature superconductors based on alternating layers of conductors and non-conductors. They have yet to prove their conjecture.

You can [sign up with the IOP](#) [10] and get alerts monthly on fields you are interested in.

And how is Polywell Fusion coming along? Slower than expected but research continues. Which either means no show-stoppers or they have covered them up. I tend to favor "no show-stoppers" but there are others with a different opinion.

M. Simon's e-mail can be found on the sidebar at [Space-Time Productions](#) [11].

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Links:

- [1] <http://iecfusiontech.blogspot.com/>
- [2] <http://iopscience.iop.org/0953-2048/26/2/email-alert/1135265603>
- [3] <http://iopscience.iop.org/0953-2048/26/2/025001>
- [4] http://www.ch.ic.ac.uk/rzepa/mim/century/html/ybco_text.htm
- [5] <http://www.youtube.com/watch?v=rydU0s8RAR8>
- [6] <http://science.howstuffworks.com/transport/engines-equipment/maglev-train.htm>
- [7] <https://www.llnl.gov/str/Post.html>
- [8] <http://en.wikipedia.org/wiki/Inductrack>
- [9] <http://iopscience.iop.org/0953-2048/26/2/025015>
- [10] <https://ticket.iop.org/account?return=http%3A%2F%2Fiopscience.iop.org%2F0953-2048%2F26%2F2%2Femail-alert%2F1135265603>
- [11] <http://spacetimepro.blogspot.com/>