

letters

results of physics, who do not belong to the "invisible colleges" and do not have informative colleagues and graduate students nor familiarity with the primary literature. If SPIN, and all other products can be useful in this way, they will in turn directly aid the financial health of the physics community.

S. SCHIMINOVICH
A. W. K. METZNER
Publications Division
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Ultrahigh fields

Your news story on ultrahigh field magnets, "Hybrid Magnets Promise High Field for Low Power" (October, page 20), does not, in our opinion, fully reflect today's state-of-the-art and, as such, is possibly misleading to your readers.

As a manufacturer of superconducting Nb_3Sn material as well as superconducting magnets and magnet systems, our corporation is very involved in the technology of ultrahigh magnetic fields. For several years, the limit to the magnetic field strength of superconducting magnets has been 150 kG. Finally, in the summer of this year, a significant breakthrough occurred whereby the 150-kG barrier was decisively penetrated, and a Nb_3Sn magnet of 165 kG was successfully demonstrated by Intermagnetics (see October, page 34). Although this magnet has a bore of only 25.7 mm, the nature of the advance is such that the new design and material that enabled this breakthrough can almost certainly be extended to much higher fields (using V_3Ga superconductor) and to magnets with a much larger bore.

With regard to your news report, we take no exception to your discussion that it is less expensive to produce steady fields of 200–300 kG by placing a small-bore, water-cooled magnet within a large-bore superconducting magnet rather than with a single water-cooled magnet only, since the field produced by the superconducting magnet consumes no input power and the field produced by the two magnets, is, of course, additive. Thus with the hybrid approach, fields in the range of 200–300 kG can be accomplished at a power level of only about 5–10 megawatts, rather than the 20–30 megawatts that would be required if a water-cooled magnet only were used. In economic terms the hybrid approach translates into a savings of at least \$1 000 000–\$3 000 000 in initial capital expenditure, and hundreds of dollars per hour in operating costs.

When you discuss the question of superconducting magnets themselves,

however, your remarks seem to miss the point. In mentioning the achievement of a 165-kG field at IGC, you fail to take note that such a magnet facility has both an initial capital cost and an operating cost of less than 10% of a comparable water-cooled magnet; a complete 165-kG superconducting magnet facility costs about \$100 000 while a comparable conventional facility is priced in excess of \$1 500 000. Another important point is that this breakthrough, coupled with new superconductive materials now available, should shortly enable fields much higher than 165 kG to be achieved with superconductors only, and that such a superconducting magnet will reflect even larger dollar savings when compared either to a comparable hybrid magnet or a conventional water-cooled magnet.

Finally, you make a remark most confusing to your readers when you state that "a 165-kG superconducting magnet with a 40-cm bore would be very costly." This comment is not relevant to any of the issues presented, since a 165-kG magnet with a bore as large as 40 cm is not required even if a composite field as high as 300 kG is sought in a small bore, water-cooled insert magnet. Furthermore, while a 165-kG superconducting magnet with a 40-cm bore would indeed be very costly, your readers should know that such a magnet would still cost only a small fraction of a comparable water-cooled magnet facility and would operate at zero input power rather than at the several tens of megawatts required by such a water-cooled magnet.

Finally allow me to correct a small error made in your reference to the IGC magnet—its bore is 25.7 mm, not 20 mm as you state.

PAUL S. SWARTZ
Intermagnetics General Corporation
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Reply to Soviet requests

I recently received a request from E. M. Nadgornyi of the Institute for Solid State Physics of the Academy of Sciences of the USSR in Moscow for a reprint of one of my papers as well as for exact details of special search techniques for digital computer simulation.

I hesitated to send the information requested because of the recent increased repression of Soviet advocates of civil rights and of Soviet scientists who have applied for permission to emigrate to Israel and decided to adopt a different approach in sending the requested information in this instance.

I informed Nadgornyi that while I personally favor cooperation, collaboration and dissemination of information between scientists of all countries, I cannot condone the official attitudes of

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