



Letters to the Editor

Interdisciplinary Mathematics

I hope that the December 1999 issue of the *Notices* is evidence that the mathematical world is at long last seriously recognizing the importance of research and development of “interdisciplinary mathematics”! I have been involved with this since my experience working at Lincoln Laboratory in 1959 and have seen at least some of my work become of utility in control theory, mechanics, and physics. For the past five years I have been trying to integrate some of the mathematics I know with developments in computer science.

I would like to make a modest suggestion. In my interactions over the years with scientists and engineers, I have noticed their difficulty in obtaining information about the frontiers of mathematical research in a condensed and intuitive form which might be useful in their work. Might something of this nature be made available on a Web site?

One way to do this that has occurred to me might be to piggy-back on the grant applications which most of us write throughout our career. As part of this algorithm, one usually writes a description of past work and how it re-

lates to others’. An edited version of this material (of course emphasizing its “interdisciplinary” aspects), together with an adequate bibliography, might be collected and made available on the Web under the auspices of the AMS or NSF or both, thus serving as a first approximation to the document that I have in mind.

—Robert Hermann
Brookline, MA

(Received November 22,
1999)

Chaos Theory: Present and Future

We were quite surprised by the opinion column of Steven Krantz (*Notices*,

October 1998), “See No Evil, Hear No Evil, Speak No Evil”, in which Krantz in particular claimed that “there is not one example of any scientific problem that has been solved (not just *described*) using [chaos theory].” Indeed, there are plenty of popular “near-science” publications where authors sometimes adduce highly dubious and speculative conclusions that seemingly follow from the mathematical theory of chaotic phenomena. In the history of science this frequently happens: One can mention cybernetics, singularity theory, and synergetics, where similar inferences have been posted. See also the letter by David Ruelle entitled “Achievements of Chaos Theory”, *Notices*, March 1999.

In our opinion, the main problem raised by Krantz concerns the social attitudes in a mathematical society. The example with a theater is very beautiful, but it is necessary to note that among dramatic and theater critics there are authorities whose opinions are much more important than those of an ordinary audience. Moreover, the theater directors sometimes direct their performances *despite* the critics: they are artists and have their own attitudes.

How many mathematicians have proclaimed a new paradigm and a new world picture? At the same time, mathematicians who deal with physical problems know quite well that methods of chaos theory have been successfully applied in many fields of physics. In or-

der to illustrate the obvious progress, one can mention a variety of examples. Among these are the justification of the Boltzman ergodic conjecture for certain classes of systems, the discovery of Anosov systems, time series analysis, etc. Moreover, on the basis of deterministic chaos theory it is possible now to describe such physical phenomena as self-organization and pattern formation, to quantify the fractality, and so on. Why should this area not be developed by mathematicians?

—Alexander Loskutov
Serge Rybalko
Moscow State University

(Received December 7, 1999)

FYI Item “BMS Report on Institutes”

As a member of the panel commissioned by the Board on Mathematical Sciences of the National Research Council, I write to correct several inaccuracies in the “For your information” note by Allyn Jackson entitled “BMS Report on Institutes” in the December 1999 issue of the *Notices*. First of all, the panel was told from the start that its task was to be totally independent of the re-competition process for existing NSF-supported mathematical institutes. Second, I recall no support whatsoever from panel members for an Oberwolfach-style U.S. conference center. Third, the panel strongly urged the preservation of funds for principal investigator grants. Finally, the panel’s recommendation of consideration of two new sorts of institutes was made with the explicit caveat that such institutes should be funded with new funds and not drain scarce resources from existing NSF research programs. Indeed, the report states in its Executive Summary and repeats in its Recap and Closing Comments the following statement, italicized both times for additional emphasis: “[T]he committee strongly believes that it would not be in the best interest of either the mathematical sciences community or society as a whole to transfer funding from existing mathematical sciences individual (principal investigator) research grant programs to funding for existing or