



Editorial

ANALYSIS AND CALCULATIONS

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The importance of analysis in mathematics cannot be overestimated. Many areas of modern mathematics may be seen as parts of analysis while, at the same time, many areas of mathematics heavily rely on analysis to built on and further comment on their problems.

Indeed many mathematicians, who consider themselves to be analysts, work on differential equations and prove numerous and powerful results regarding their behavior (enumerating these results, one could begin by mentioning the existence theorem of solutions in the O.D.E's case, and various results concerning solutions of boundary value problems in the P.D.E.'s case).

Such was the success of analysis in geometry, that the term "global analysis" was coined to describe the work of those mathematicians who use analytical techniques to study geometrical and topological properties "in the large". The proof of the Geometrization and Poincare conjectures is probably the most famous result of using analytical tools (properties of the Ricci flow) to achieve a geometrical result (classification of manifolds).

Algebra is not beyond the limits of analysis either. In number theory p-adic functional analysis provides us with results on the Weyl conjectures, while one cannot overlook the work of H ormander and its consequences in commutative algebra and complex algebraic geometry (the effective Nullstellensatz" easily comes to mind).

On the other hand, all these require concrete estimates. Norms have to be calculated, operators must be inverted and various types of constants should be explicitly constructed. Furthermore, for some time now, computers have become important not only as computational tools, but as valuable "coworkers" as well. Computer assisted proofs are here to stay, allowing us to draw definite conclusions on problems difficult to attack from a more "old fashioned" viewpoint.

The four color map theorem and the existence of a strange attractor in the Lorenz system were proved by mathematicians using computers to perform calculations unattainable by hand.

All these are but a few examples of the effectiveness of analysis, along with reliable calculations, on various problems arising in all areas of mathematics. We hope that this journal will serve as a widely respected forum for communicating techniques and results that will further broaden our understanding of the mathematical and physical universe.



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