

Graphical Postprocessing of Fields

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Abstract

In engineering field computations, the results are often millions of numbers that one cannot make head or tail of. These could for instance represent the temperature or electromagnetic field at discrete points in a large domain. The domain itself could be in one dimension or in two or three dimensions. A good computer package should postprocess the field so that what the user sees are not numbers, but rather some meaningful pictorial representation of the numbers. These representations have included graphs, bar charts, pulse-charts, shaded colour views, equipotential plots etc..

However, no one has really studied how meaningful to the user these representations are. Users usually work with a representation employed by a package they have bought at a shop. There is no exercise of choice. As such, the methods of representation used by the most powerful vendors have come to stay. The scene is dominated by commercial interests.

This study therefore assesses independently which of these methods of representation are most appropriate and whether indeed appropriateness is dependent on the audience, such as school children, professional scientists, non-technical managers, etc. Different commercial software vendors were contacted, samples obtained from them, and these were then tested using groups of graduates, undergraduates, highschoolers and managers to determine the effectiveness of these graphical representations of fields.