



Dedicated to Ukrainian folk that protects the World against KGBism, the recent form of fascism

Kolloquiumsvortrag

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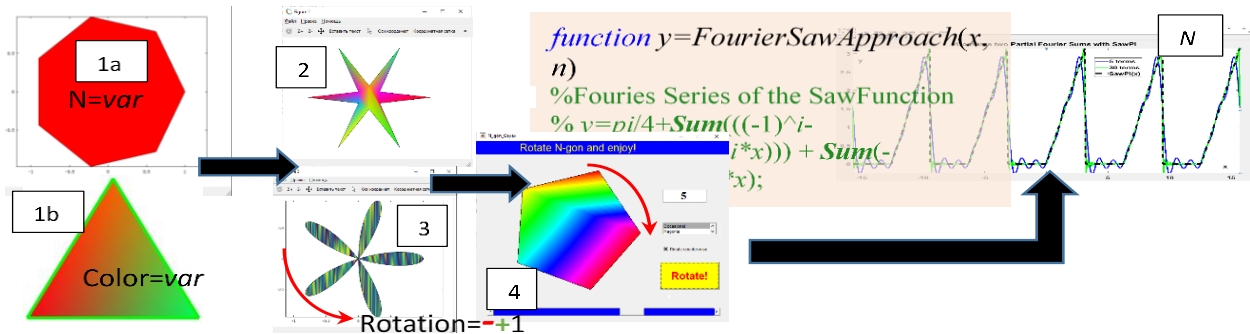
Attractive Algorithms to inspire learning Programming and Mathematic

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Having changed research work to educational one, the author came to the problem how to attract students to research thinking and true understanding mathematics and physics. He provided an active educational method of “[Student’ Own Discoveries](#)” in his [courses](#). However, it required an effective exploitation of recent computer power. For this, author’s course of “[Programming for Engineers](#)” was developed, and I am going to report its introductory part here.

Among many programming languages, MATLAB-family of softs, i.e. *FreeMat*, *Octave* etc. is found to fit best for the above purpose, even with regard to *Scratch*, *Python* or, say, to *Wolfram Mathematica*. Particularly, MATLAB is especially attractive because of its graphical power. I willingly will share a sequence of algorithms illustrated by a few figures here. It suggests to students how funny “games” lead to serious problems.



Students are encourage to realize their own “crazy” ideas and experiment with them. My 7 year teaching experience shows that first year students, as well as school children of last classes, accept such nontraditional tasks creatively and enjoy it. After this, they creatively master [next modules of my course](#) with more complex mathematics, physics and programming problems. The modules include more programming techniques such as GUI, polymorphism and OOP, their application to researching tasks of the current Math course, intellectual programs, recursion, wavelets etc. Student’ own “experiments” are always welcome and such their approach is continued to elder teaching years being applied to courses “[Information Theory](#)” and “[Modelling of complex systems](#)”, as well as their [Term Works](#) and first (hopefully not last) [scientific publications](#).

It is my opinion that the method of “[Student’ Own Discoveries](#)” suits best for education of future teachers and engineers. It is my hope to continue its further development, to present my whole course and attract scientists interested in common projects.