

MaplePrograms

This file contains a number of Maple programs that were utilized in the development my various monographs on Non-Equilibrium Systems and Irreversible Processes from a Perspective of Continuous Topological Evolution. Many of the computations if done by hand are extremely tedious. Moreove, the methods of symbolic computation led to a number of new concepts and theorems, which appeared as the result being able of to produce many, many examples.

From 1990 to 2010 hundreds of Maple programs were written and re-written. This file includes a selection of the most important programs which produced and checked the many examples in the monographs. You can download these programs in pdf format by using the URL sequence given for each specific example. Maple .mws and .mw programs ready to run on Maple 14 are available on email request.

Code: emMaxwell.pdf

This Maple program computes Maxwell-Faraday formulas from the postulate of potentials $F-dA=0$. Given a 1-form of Action on 4D space time, the E and B fields follow by exterior differentiation. The 2-form F is the set of limit "points" for the 1-form, A.

The Maxwell Ampere equations are computed from the postulate of charge currents, $J-dG=0$. The 2-form density, G, with components D and H, utilizes the Lorentz-Minkowski vacuum constitutive equations, $D = \epsilon E$, $B = \mu H$.

This program has numerous solutions.

URL : <http://www22.pair.com/csdc/pdf/emMaxell.pdf>

Code: Schwarzschild.pdf

URL : <http://www22.pair.com/csdc/pdf/Schwarzschild.pdf>

Code: EquivalPrin.pdf

URL : <http://www22.pair.com/csdc/pdf/Equivalence.pdf>

Code: FresnelKummer.pdf

This pdf file has numerous solutions.

URL : <http://www22.pair.com/csdc/pdf/FresnelKummer.pdf>

Code: DynamicalSystems.pdf

This program has numerous solutions:

Stretch, Twist, Fold:	search for (2) in pdf file
Lorenz	search for (19) in pdf file
Henon	search for (35) in pdf file
Taylor Green	search for (47) in pdf file
Moffat	search for (58) in pdf file
Brusselator	search for (72) in pdf file
Chiral Separation	search for (89) in pdf file
Dynamo	search for (111) in pdf file
Spinning Top	search for (124) in pdf file
Rossler	search for (138) in pdf file
Zhabotinsky	search for (152) in pdf file
Pitchfork Hopf	search for (165) in pdf file
TransCritical Hopf	search for (181) in pdf file
Saddle Node Hopf	search for (195) in pdf file
Hysteritic Hopf	search for (212) in pdf file
Generalized Langford	search for (229) in pdf file

URL : <http://www22.pair.com/csd/pdf/DynamicalSystems.pdf>

Code: emConstitutiveCurrents.pdf

This pdf file has numerous solutions.

URL : <http://www22.pair.com/csd/pdf/emConstitutiveCurrents.pdf>

Code: WaveParticleAffine.pdf

This pdf file has numerous solutions.

URL : <http://www22.pair.com/csd/pdf/WaveParticleAffine.pdf>