eucurvesv3

consists of a Mathematica notebook and for its use needed packages developed as an interactive introduction to

Euclidean Curve Theory.

The condition for using it interactively is the access to Stephen Wolfram's program Mathematica. The free program Wolfram CDF Player permits a passive look into the notebooks only. The notebook and packages of eucurvesv3 are tested with Mathematica v. 9.0.1.0 and 11.1.1.0, but very likely they may be used with earlier versions too. Sometimes simplifications of large symbolic Output runs faster with version 9.0.1 than with version 11.1.1.

A prerequisite for understanding the matter is the knowledge of analysis and linear algebra as usually learned in the first two years of a study of Mathematics. The added file ECTh.pdf contains the paper

The Fundamental Theorem for Curves in the
n-Dimensional Euclidean Space

describing the theoretical background of E. Cartan's method of moving frames applied to Euclidean curve theory as done in the notebook.

The interactive part is the notebook EuCurvesv3.nb, titled "Euclidean Curve Theory". To work with the notebook one needs the packages euvecv2.m, tensalgv3.m, and eudiffgeov3.m contained in eucurvesv3.zip. Furthermore I added Alfred Gray's collection of curves: CURVES.m. The packages Curves2D.m, Curves3D.m are the parts of CURVES.m containing the Mathematica definitions of plane curves and of curves in the space.
Copy the notebook and all packages into your working directory, open the notebook, read the Section **Initialization,** and proceed as described there! The packages of eucurvesv3.zip should not be mixed or replaced by the packages of earlier versions,. Not regarding this can lead to mismatch of the defined functions, and errors!
Have success and pleasure!

Berlin, July 15, 2017

Rolf Sulanke