

Title: Numerical solution of inverse integral equations arising in mathematical modeling for biofuel research

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Abstract: The aim of this bachelor thesis is numerical solution of a Fredholm integral equation of the first kind arising in the biofuel research. The thesis focuses on the Lagrange interpolatory quadrature formulae. The Trapezoidal and the Simpson rules with equidistant and logarithmic spacing are considered. The goal is to compare these formulae and to determine the most applicable. The thesis also concerns the minimum number of required measurement data to achieve given accuracy. Numerical experiments with simulated data are presented.

Keywords: inverse integral equation, quadrature, convergence, error estimates