ROUCHE'S THEOREM APPLICATION

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In my contribution to the conference I would like to talk about enumeration of statistically significant variable

$$S = \prod_{z \in M} (1 - z), \qquad (es)$$

where M is a set of all solutions of equation

$$e^{\lambda} z^{n} = e^{\lambda z}, \quad 0 < \lambda < n, \quad n \in N \qquad (r)$$

belonging to closed circle $K(0,1) \subset C$. The motivation consisted in verification following estimate

$$S \approx n - \lambda \quad for \ \frac{\lambda^n}{n!} \ll 1$$

done on base of knowledge from analysis and algebra.

First we discuss solvability of equation (r) from view of complex analysis. The most important for this will be the Rouche's theorem from area of complex analysis, denote as *principle of argument*. Next we transform the problem of equation solutions search into form acceptable to processing by means of specific modification of numerical method *bisection*. Next we will deal of dependence precision of variable S from (es) on precision of equation solutions location. In the end we will talk about algorithmic realization.