

## **ALGORITHM OF CALCULATION OF LYAPOUNOV'S COEFFICIENTS AT ANALYSES CHEMICAL AUTO-OSCILLATIONS**

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Liapounov's coefficients ( $L_k$ ) are the functions of parameters of dynamic system on the plane and they are used for its. A lot of geological process, for example oscillatory zoning in minerals, are describing by such systems. Proposed algorithm allows us to find numerical value of  $L_k$  for any  $k$ , if we can not find its analytical value. Using this algorithm the complete qualitative analyses of calcite crystallization model was made. It has been shown that this model has oscillatory solutions. Various types of behaviors of the system are described by behavior diagrams in terms of four parameters of model. The complete list of phase portraits of the model is performed and phase portrait with three limit cycles near one steady state is found for concrete parameter values. It has allowed to imagine a complete picture of behavior of the system. Under a minor change of parameter a sharp transition from one steady state to another one with appearance or disappearance of a limit cycle is possible.