

# **Numerical and analytical investigation of blow up properties of chemotaxis models**

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## **Abstract**

The Keller-Segel system is a linear parabolic-elliptic system, which describes the aggregation of slime molds resulting from their chemotactic features. By chemotaxis we understand the movement of an organism (like bacteria) in response to chemical stimulus, for example by certain chemicals in the environment.

In this paper we use the results of a paper of Zhou and Saito to validate our conservative Finite-Volume solution method with respect to blow-up analysis and equilibrium solutions. Based on these results we study model variations and their blow-up behaviour numerically.

We will discuss the question if conservative numerical methods are able to model a blow up behaviour in the case of non global existence of solutions.