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Qing Xia* (xia@math.utah.edu), University of Utah, Department of Mathematics, 155 S 1400 E, ROOM 233, Salt Lake City, UT 84112. *Adaptive Difference Potentials Method for the Chemotaxis Model in 3D*. Preliminary report.

The Patlak-Keller-Segel chemotaxis system models the directed motion of cells or bacteria in response to chemical stimulus. The model is described by coupled advection-diffusion equation for the density of cells and reaction-diffusion equation for the concentration of chemicals. Chemotaxis system poses numerical challenges in capturing the sharp gradients of solutions observed in the blow-up phenomenon. In this talk, we will discuss an adaptive algorithm based on difference potentials method for such model. Numerical results to illustrate accuracy and efficiency of the proposed algorithm will be presented. Current and future research work will also be discussed. This talk is based on joint work with Y. Epshteyn. (Received September 11, 2017)