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Title : Unboundedness and concentration phenomenon of solutions to a degenerate drift-diffusion equation with the mass critical exponent

Abstract : In this talk, we consider unboundedness and concentration phenomenon of solutions to a degenerate drift-diffusion equation with the mass critical exponent. We proved that solutions does not remain bounded in time when the initial data has negative free energy under non-weight condition. Moreover, we show that the mass concentration phenomenon of radially symmetric solutions to our problem occurs with the sharp lower bound related to the best constant of the Hardy-Littlewood-Sobolev inequality. Moreover, an estimate of concentration rate of the total mass is given by the natural rate which is induced by the natural invariant scaling of our problem. We note that the sharp lower bound can be estimated by the well-known value 8π when we take the limit with respect to the dimension to 2.