Kazantsev model for 2.5D flows

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We study the dynamo instability of the Kazantsev model for a 2.5*D* flow with the flow defined by $(u(x, y, t), v(x, y, t), w(x, y, t))$. We are interested in dynamo instability for nonhelical flows. We derive here the governing equations for the second order magnetic field correlation function. We then study the growth rate of the dynamo instability as a function of the control parameters. We compare our results of the analytical calculation with numerical simulation of the model flow and with other time correlated flows.