Kazuo Yamazaki* (kyamazaki@math.okstate.edu), 401 Mathematical Sciences Building, Dept. of Math., Oklahoma State University, Stillwater, OK 74078. Regularity criteria of MHD system involving one velocity and one current density component.

We discuss recent developments on the global regularity issue and the component reduction results on the Serrin and Beale-Kato-Majda criterions. Our discussion will concern the magnetohydrodynamics (MHD) related systems including the Navier-Stokes equations and micro-polar fluid system. In particular, we discuss how the Serrin-type regularity criteria of the three-dimensional MHD system may be reduced to only one velocity vector field component and one current density component. The proof requires a non-trivial decomposition of four non-linear terms which may be interesting in itself with further applications. (Received June 30, 2014)