Abstract Submitted for the DPP09 Meeting of The American Physical Society

Physics validation for design change of KSTAR passive stabilizer¹ Y.M. JEON, J.Y. KIM, Y.K. OH, H.L. YANG, W.C. KIM, H.K. KIM, National Fusion Research Institute, S.A. SABBAGH, J.M. BIALEK, Columbia University, D.A. HUMPHREYS, A.S. WELANDER, M.L. WALKER, General Atomics — Recently, the design of the passive stabilizer in KSTAR has been changed to improve controllability of the active control system and reduce the possibility of producing an additional error field. Originally the passive stabilizer in KSTAR was designed for RWM and vertical instability (or VDE) stabilizations and plasma startup efficiency, so that current bridges were designed and combined through 3D saddle-loop connections. Since the key design change is removing the current bridges, it's essential to assure satisfactory control performance for these instabilities under the design change. Control capability for n=1 RWM and achievable β_N will be addressed as a primary goal of the passive stabilizer together with vertical instability control and effects on plasma startup. In addition, the changes in electro-magnetic force on conducting structures will be discussed qualitatively as a key engineering issue of the design change.

¹This work was supported by Korean Ministry of Education, Science and Technology.

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Date submitted: 17 Aug 2009

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