Valence Instability and Mass Enhancement in an Extended Periodic Anderson Model TAKASHI SUGIBAYASHI, YASUHIRO SAIGA, DAI HIRASHIMA, Nagoya University — In CeCu$_2$Si$_2$, CeCu$_2$Ge$_2$ and CeRh$_{1-x}$Ir$_x$In$_5$, the shape of the superconducting region is asymmetric and the superconducting transition temperature $T_c$ reaches its maximum far away from the antiferromagnetic quantum critical point. Onishi and Miyake ascribed the asymmetric behavior of $T_c$ to the enhanced valence fluctuations. They introduced the repulsive interaction $U_{cf}$ between a conduction electron and an $f$ electron, in addition to the Coulomb interaction $U$ between $f$ electrons and studied the periodic Anderson model (PAM) with both $U$ and $U_{cf}$ (which is the so-called extended PAM). We investigated the valence instability in the extended PAM and two-fold degenerate extended PAM with the dynamical mean field theory. In these models, we found that the valence instability is observed when $U_{cf}$ is larger than the conduction band width $2W$ and the $f$-electron level $\epsilon_f$ is deeper than the lower bound of the conduction band, $-W$. It is also found that the orbital degeneracy suppresses the valence instability. In the parameter region of inducing the valence instability, we investigate the mass enhancement factor $Z_f^{-1}$ which is related to the specific heat.