Supplementary Material: Exact Formulas for the Computation of Expected Tchebycheff Improvement

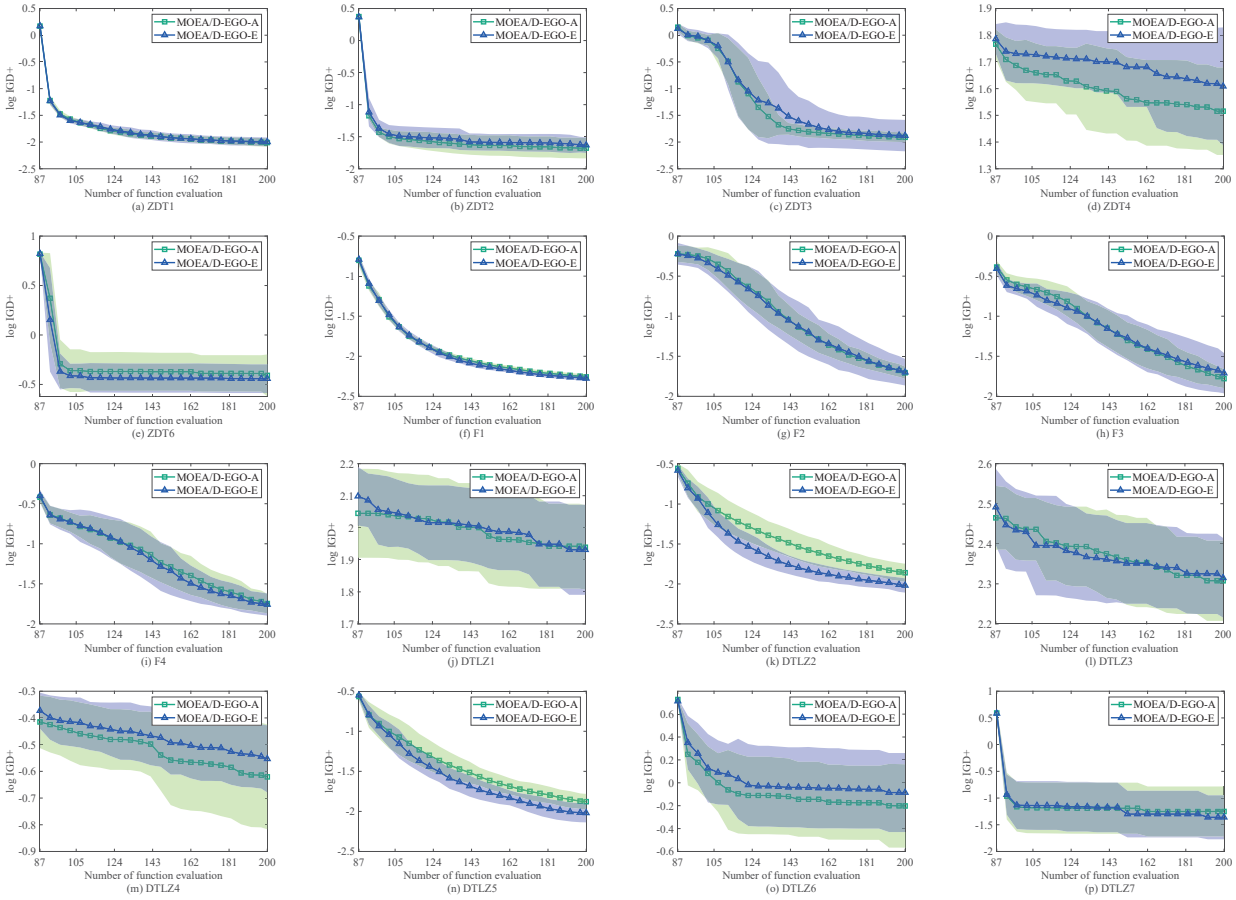

Figure 1: The log IGD+ w.r.t. the number of function evaluations achieved by MOEA/D-EGO-A and MOEA/D-EGO-E on all the test problems with $q = 5$. The solid line is the mean value averaged over 21 independent runs, and the shaded region is the standard deviation around the mean value.

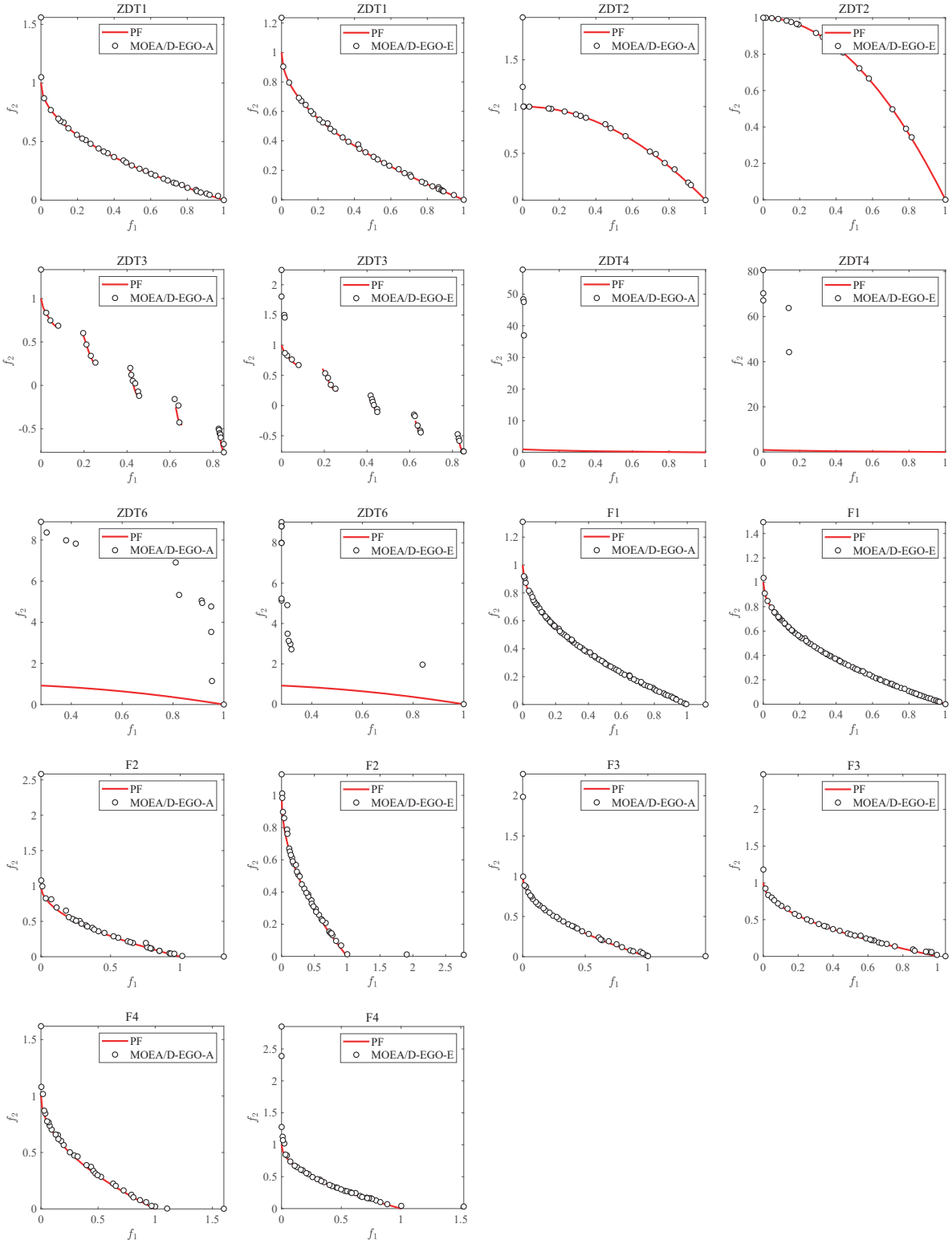

Figure 2: Plots of the nondominated solutions obtained by MOEA/D-EGO-A and MOEA/D-EGO-E with the median IGD+ value on ZDT and F1-F4 with $q = 5$ over 21 runs.

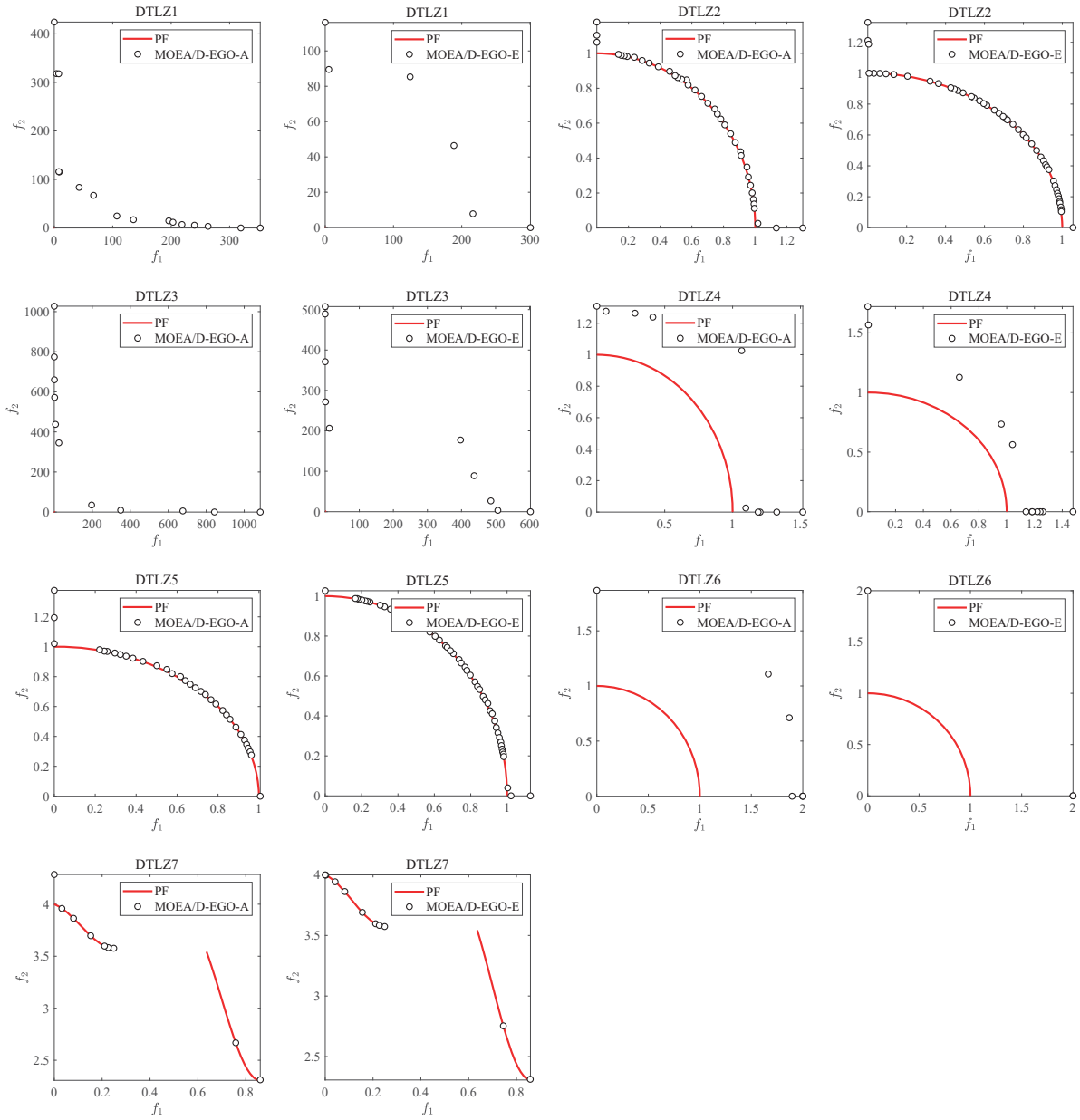

Figure 3: Plots of the nondominated solutions obtained by MOEA/D-EGO-A and MOEA/D-EGO-E with the median IGD+ value on DTLZ with $q = 5$ over 21 runs.

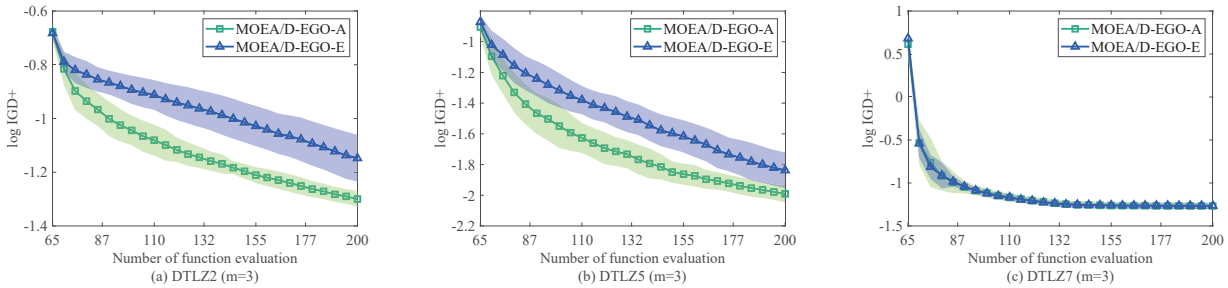

Figure 4: The log IGD+ w.r.t. the number of function evaluations achieved by MOEA/D-EGO-A and MOEA/D-EGO-E on three-objective test problems with $q = 5$. The solid line is the mean value averaged over 21 independent runs, and the shaded region is the standard deviation around the mean value.

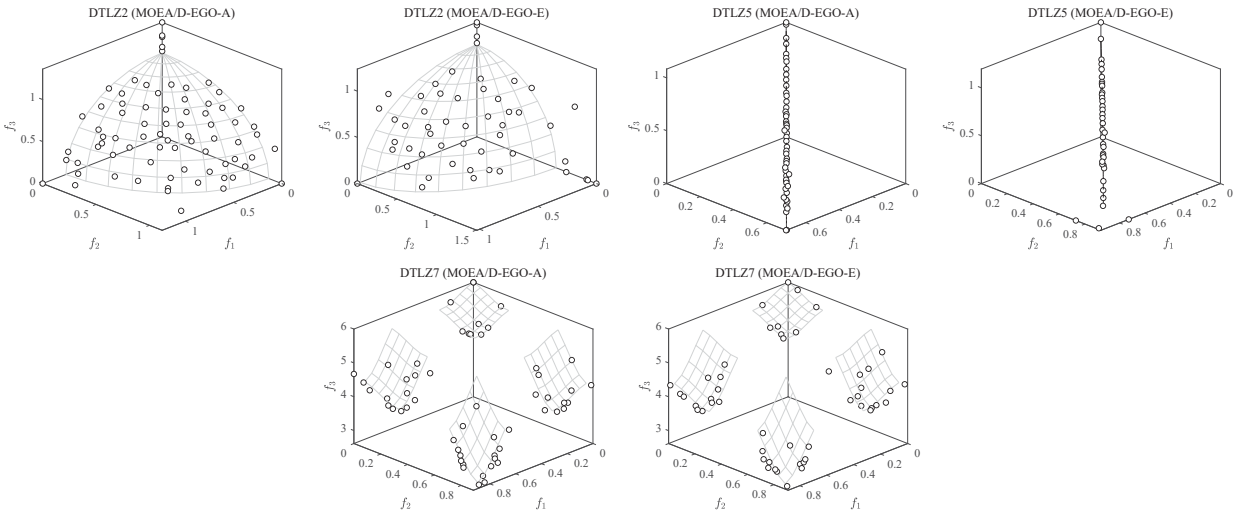

Figure 5: Plots of the nondominated solutions obtained by MOEA/D-EGO-A and MOEA/D-EGO-E with median IGD+ value on three-objective test problems with $q = 5$ over 21 runs.