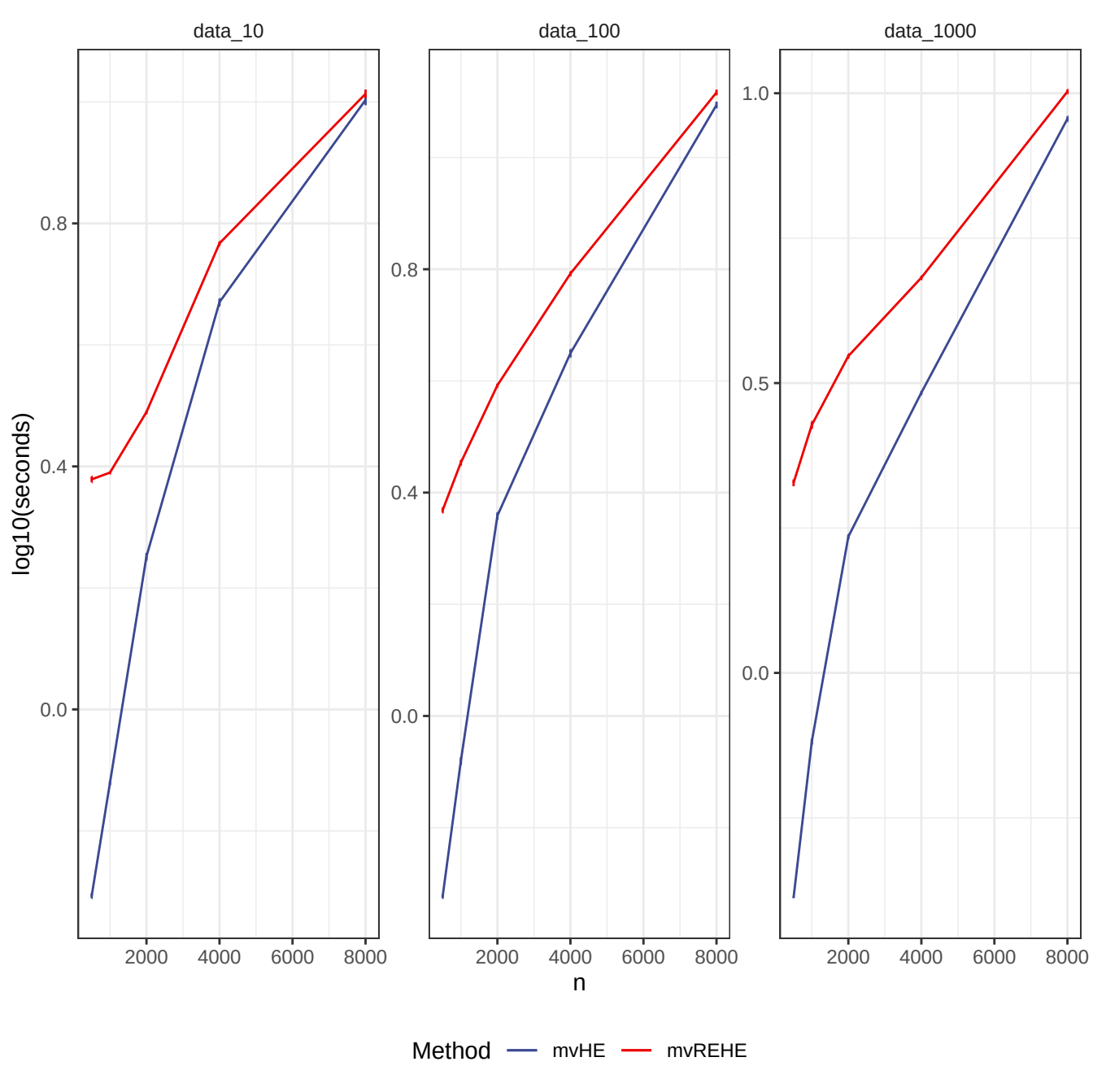
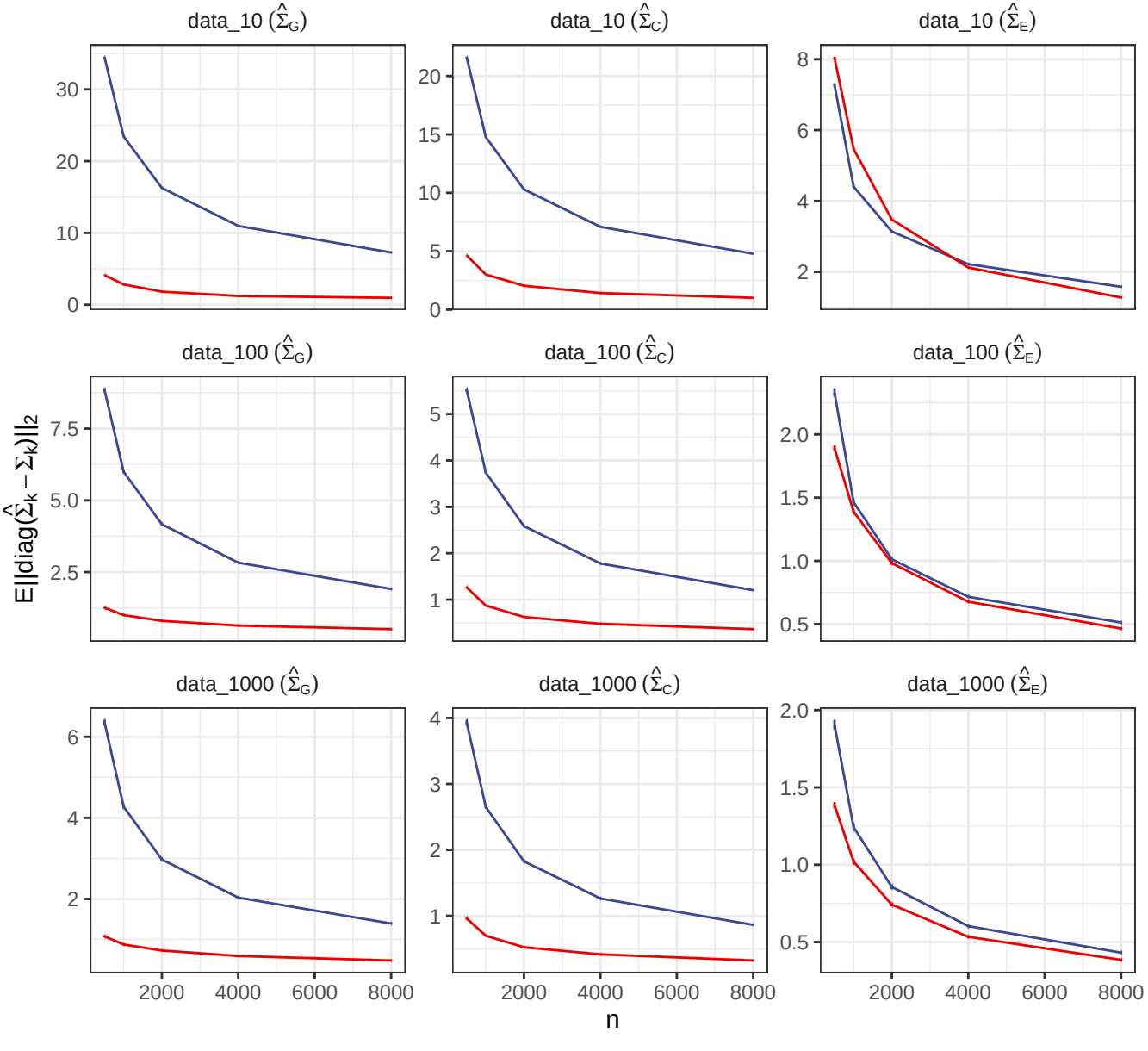
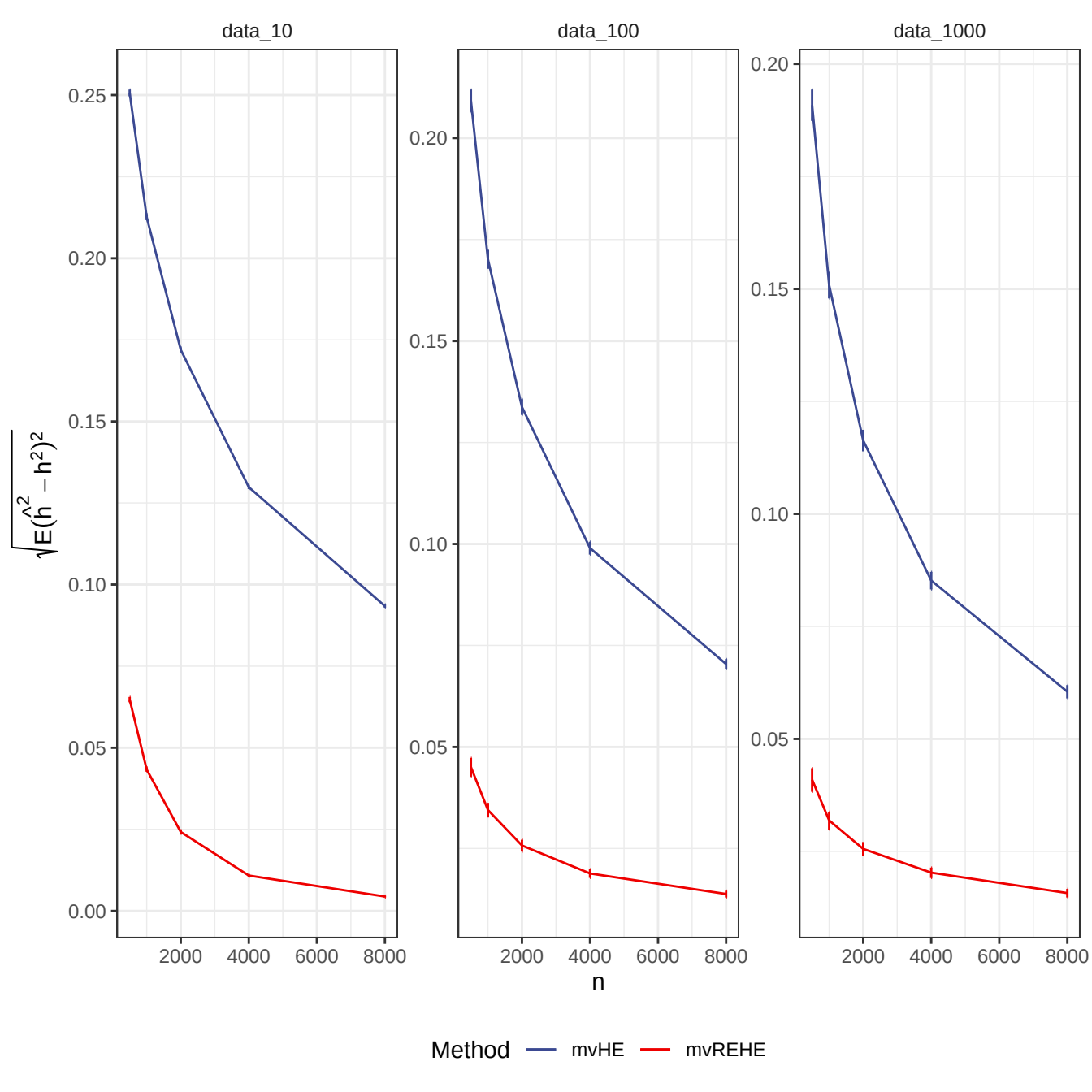
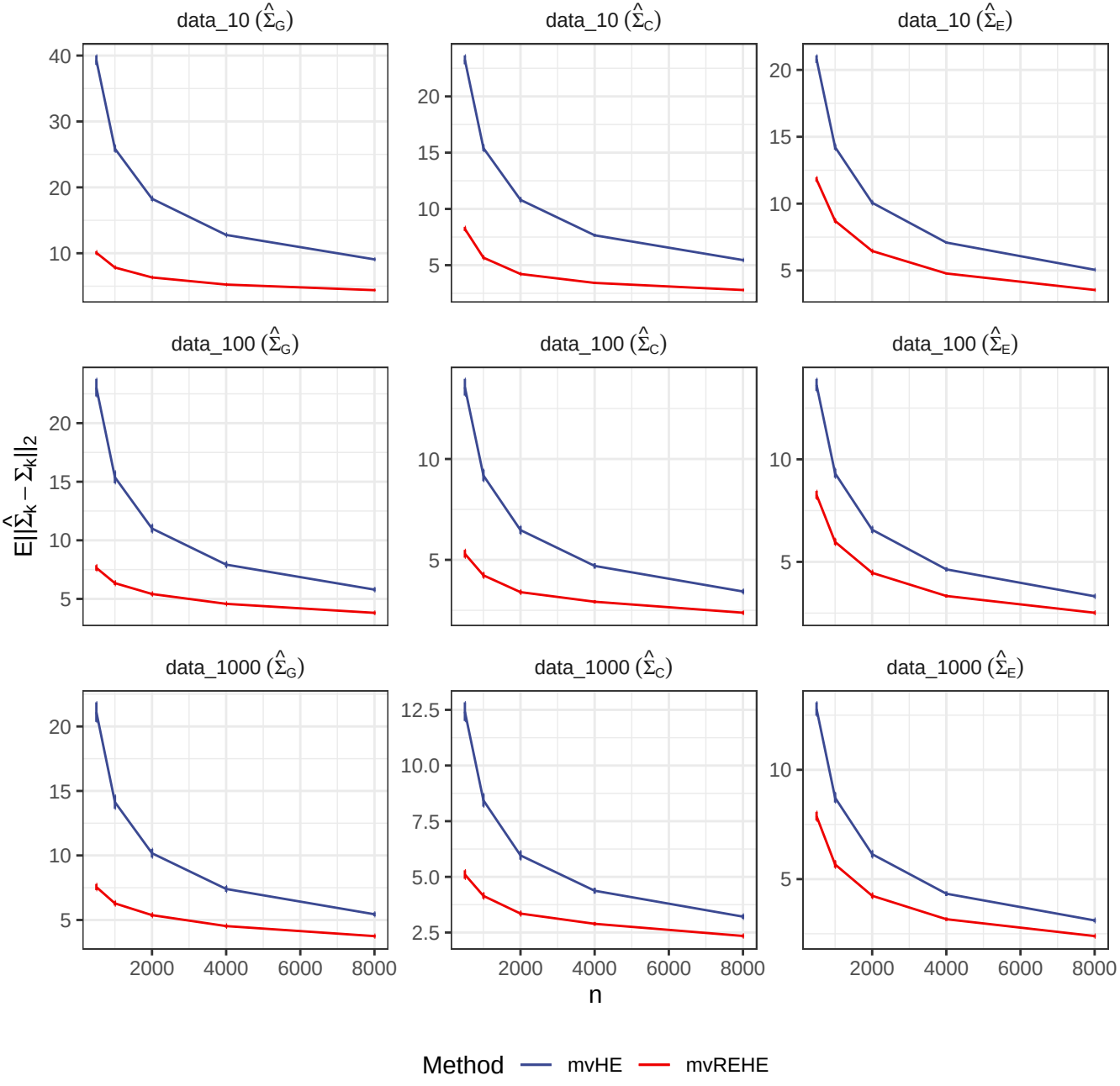
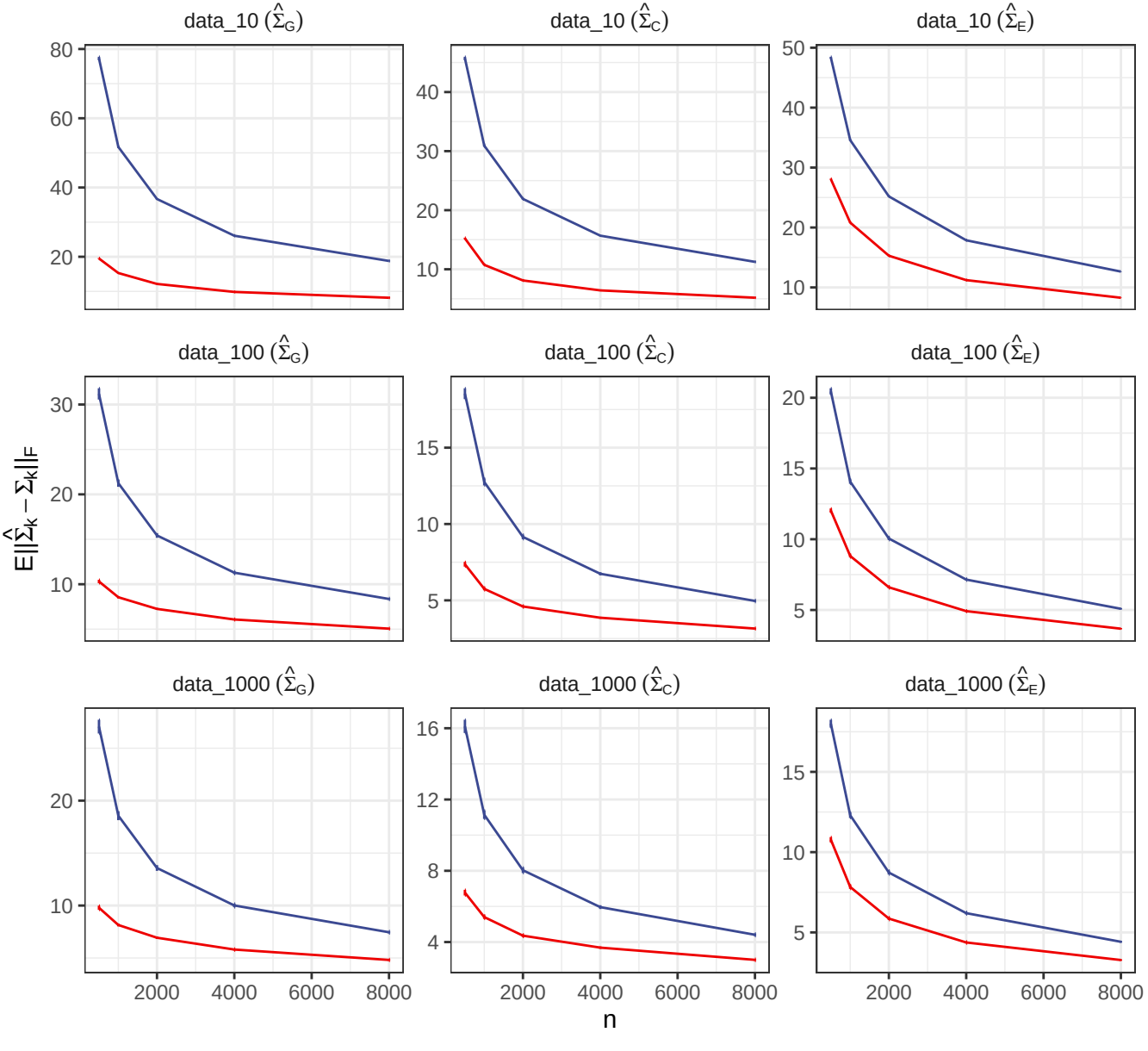
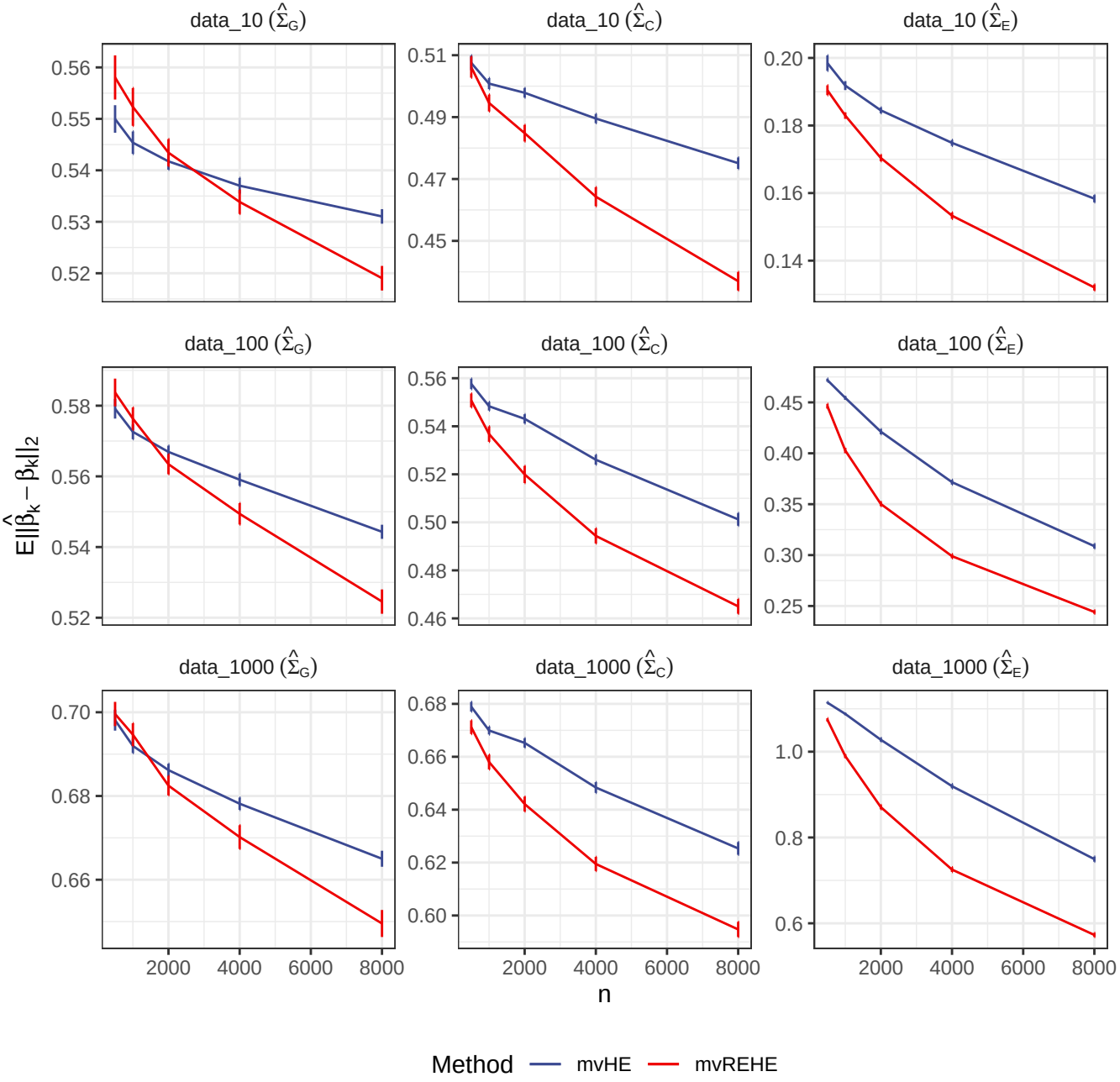

data_10
data_100
data_1000
log10(seconds)
0.0
0.4
0.8
1.0
0.5
2000
4000
6000
8000
n
Method
mvHE
mvREHE

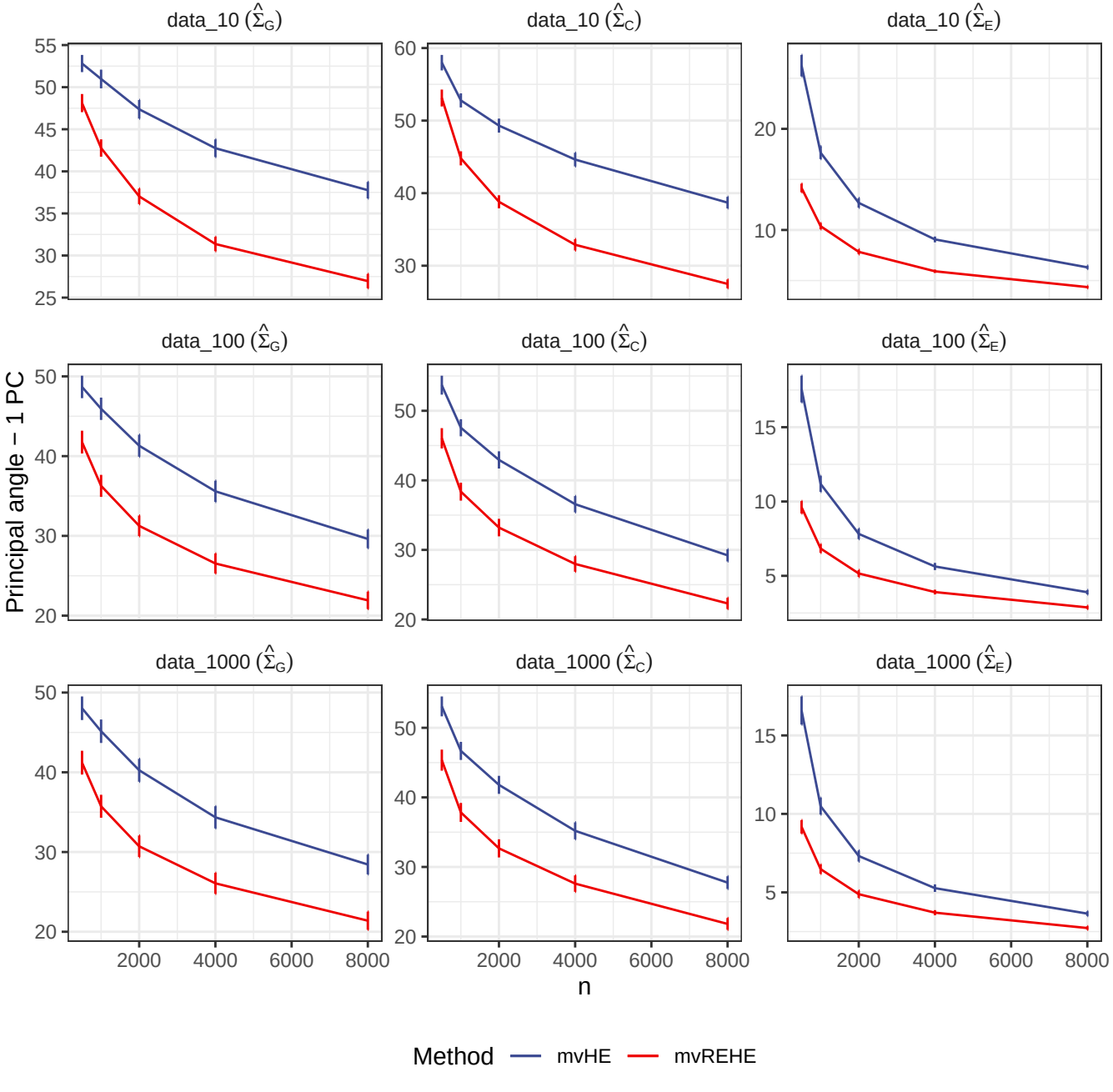

data_10 ($\hat{\Sigma}_G$)
data_10 ($\hat{\Sigma}_C$)
data_10 ($\hat{\Sigma}_E$)
data_100 ($\hat{\Sigma}_G$)
data_100 ($\hat{\Sigma}_C$)
data_100 ($\hat{\Sigma}_E$)
data_1000 ($\hat{\Sigma}_G$)
data_1000 ($\hat{\Sigma}_C$)
data_1000 ($\hat{\Sigma}_E$)
$E||\text{diag}(\hat{\Sigma}_k - \Sigma_k)||_2$
n
Method
mvHE
mvREHE

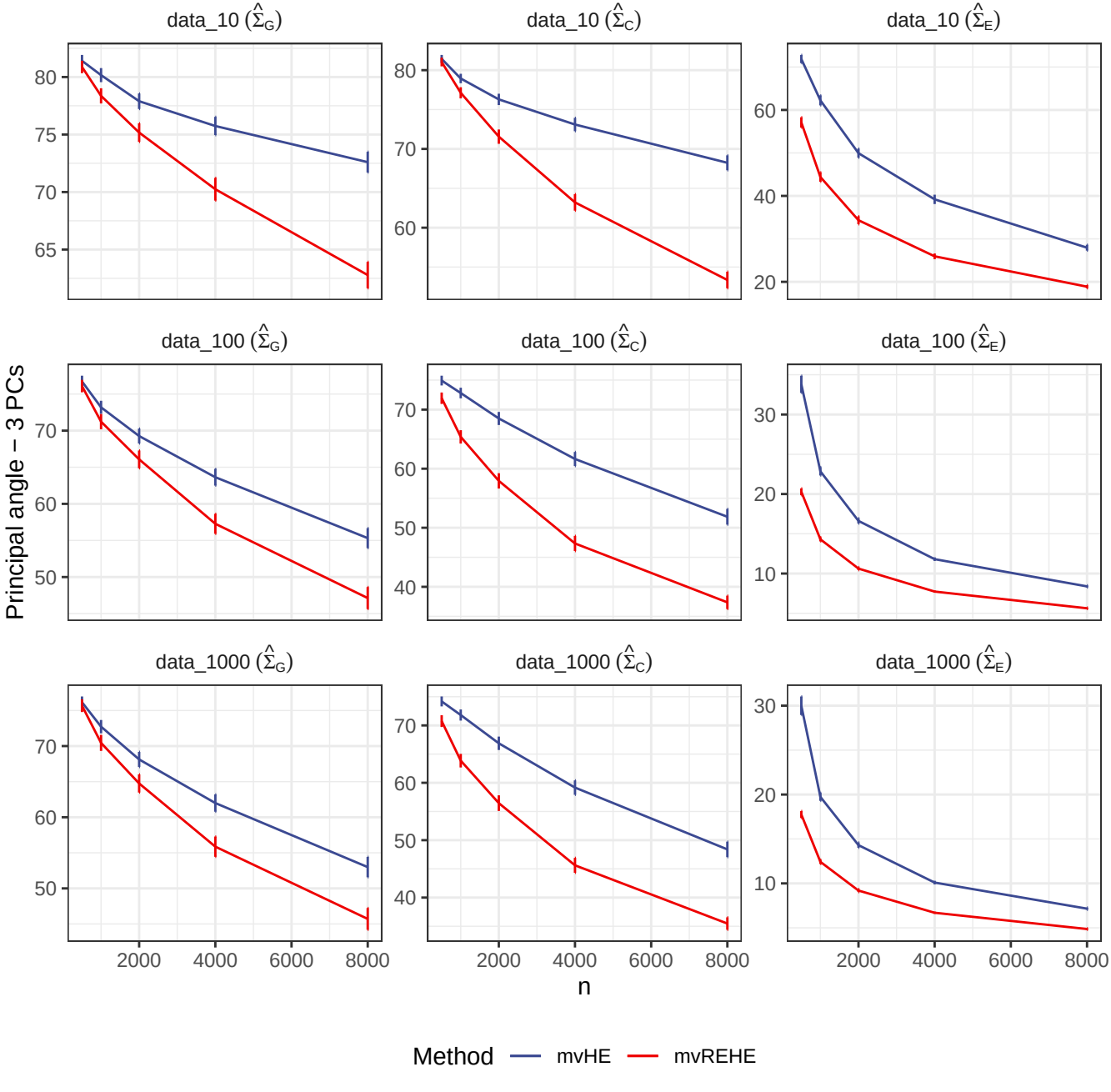

data_10
data_100
data_1000
$\sqrt{E(\hat{h}^2 - h^2)^2}$
0.25
0.20
0.15
0.10
0.05
0.00
2000
4000
6000
8000
n
Method
mvHE
mvREHE


data_10 ($\hat{\Sigma}_G$)
data_10 ($\hat{\Sigma}_C$)
data_10 ($\hat{\Sigma}_E$)
data_100 ($\hat{\Sigma}_G$)
data_100 ($\hat{\Sigma}_C$)
data_100 ($\hat{\Sigma}_E$)
data_1000 ($\hat{\Sigma}_G$)
data_1000 ($\hat{\Sigma}_C$)
data_1000 ($\hat{\Sigma}_E$)
$E\|\hat{\Sigma}_k - \Sigma_k\|_2$
n
Method
mvHE
mvREHE


data_10 ($\hat{\Sigma}_G$)
data_10 ($\hat{\Sigma}_C$)
data_10 ($\hat{\Sigma}_E$)
data_100 ($\hat{\Sigma}_G$)
data_100 ($\hat{\Sigma}_C$)
data_100 ($\hat{\Sigma}_E$)
data_1000 ($\hat{\Sigma}_G$)
data_1000 ($\hat{\Sigma}_C$)
data_1000 ($\hat{\Sigma}_E$)
$E\|\hat{\Sigma}_k - \Sigma_k\|_F$
n
Method
mvHE
mvREHE


data_10 ($\hat{\Sigma}_G$)
data_10 ($\hat{\Sigma}_C$)
data_10 ($\hat{\Sigma}_E$)
data_100 ($\hat{\Sigma}_G$)
data_100 ($\hat{\Sigma}_C$)
data_100 ($\hat{\Sigma}_E$)
data_1000 ($\hat{\Sigma}_G$)
data_1000 ($\hat{\Sigma}_C$)
data_1000 ($\hat{\Sigma}_E$)
$E\|\hat{\beta}_k - \beta_k\|_2$
n
Method
mvHE
mvREHE


data_10 ($\hat{\Sigma}_G$)
data_10 ($\hat{\Sigma}_C$)
data_10 ($\hat{\Sigma}_E$)
data_100 ($\hat{\Sigma}_G$)
data_100 ($\hat{\Sigma}_C$)
data_100 ($\hat{\Sigma}_E$)
data_1000 ($\hat{\Sigma}_G$)
data_1000 ($\hat{\Sigma}_C$)
data_1000 ($\hat{\Sigma}_E$)
Principal angle – 1 PC
n
Method
mvHE
mvREHE


data_10 ($\hat{\Sigma}_G$)
data_10 ($\hat{\Sigma}_C$)
data_10 ($\hat{\Sigma}_E$)
data_100 ($\hat{\Sigma}_G$)
data_100 ($\hat{\Sigma}_C$)
data_100 ($\hat{\Sigma}_E$)
data_1000 ($\hat{\Sigma}_G$)
data_1000 ($\hat{\Sigma}_C$)
data_1000 ($\hat{\Sigma}_E$)
Principal angle – 3 PCs
n
Method
mvHE
mvREHE