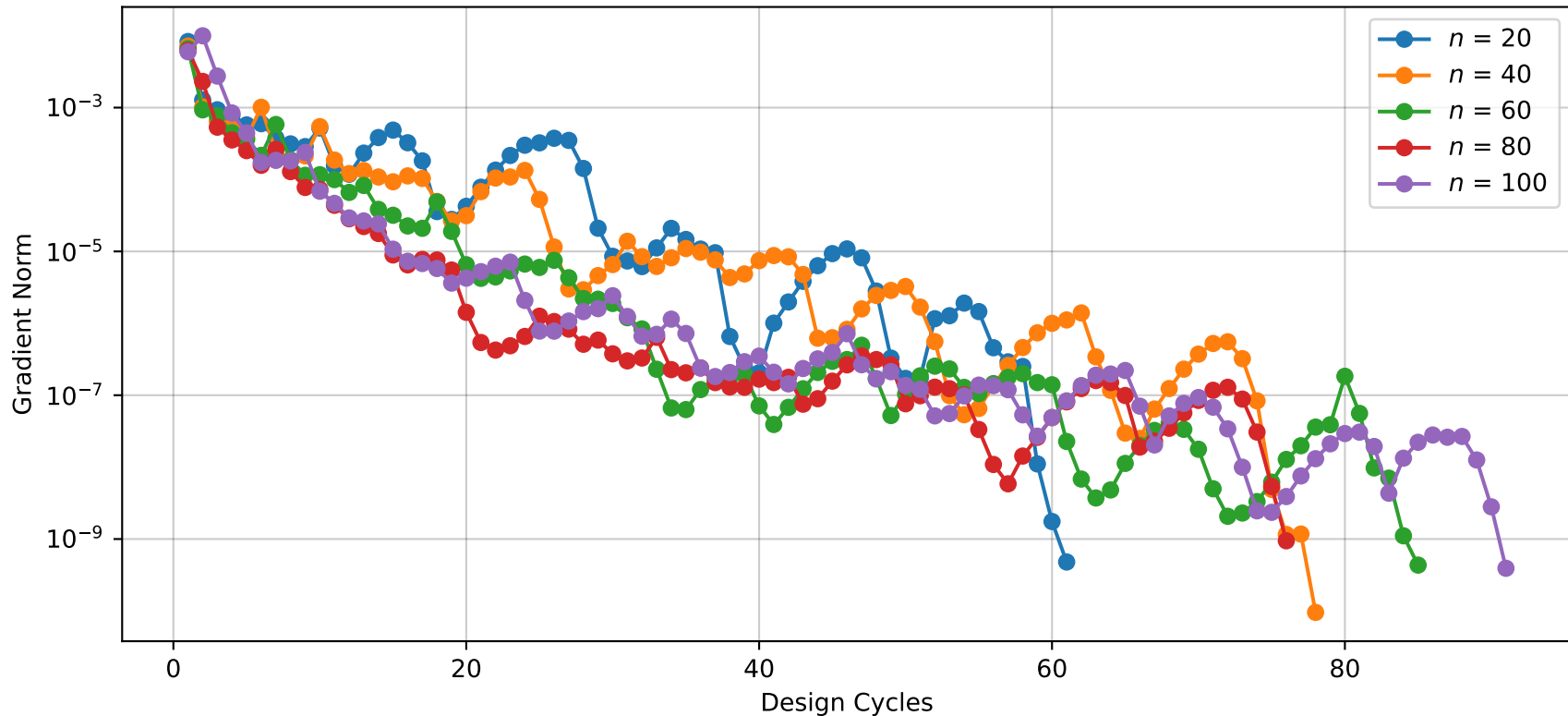
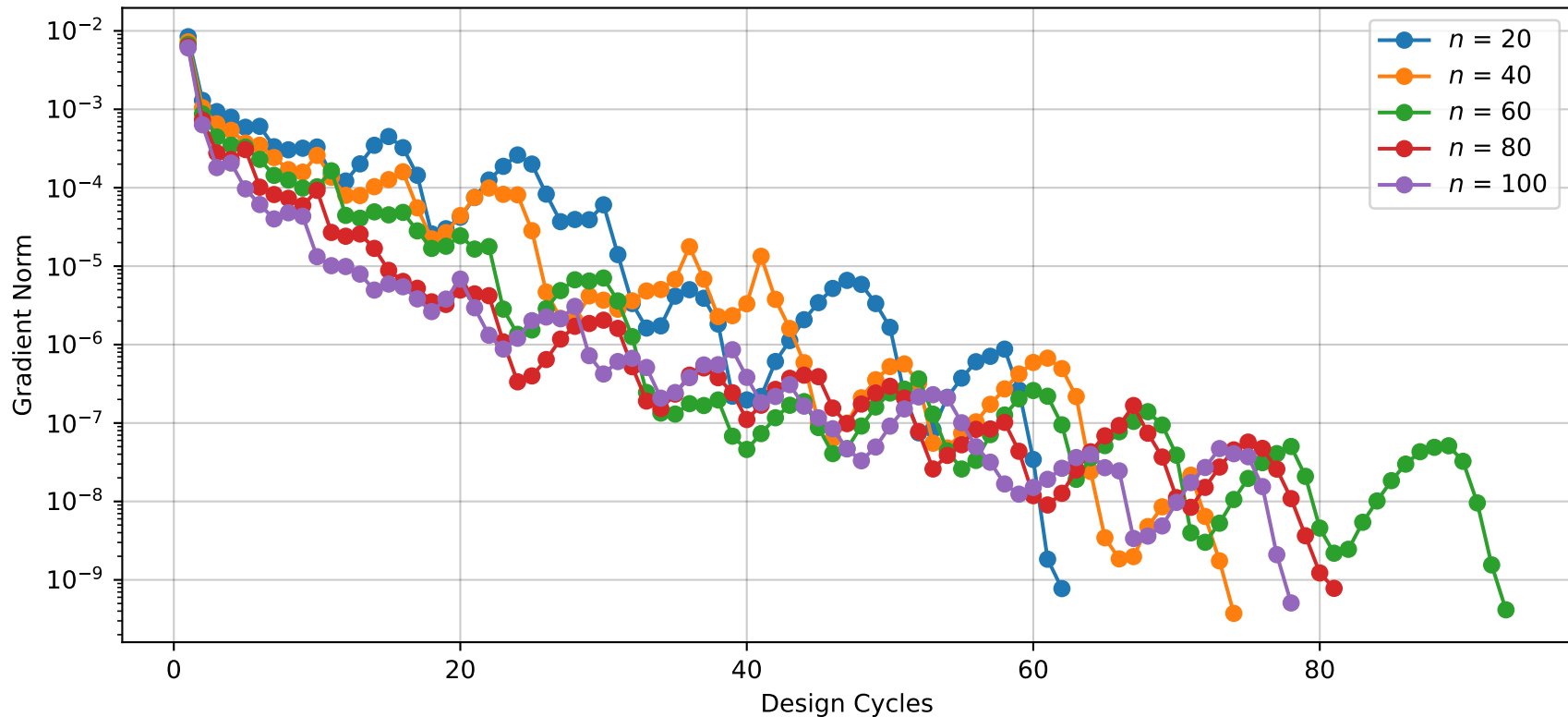


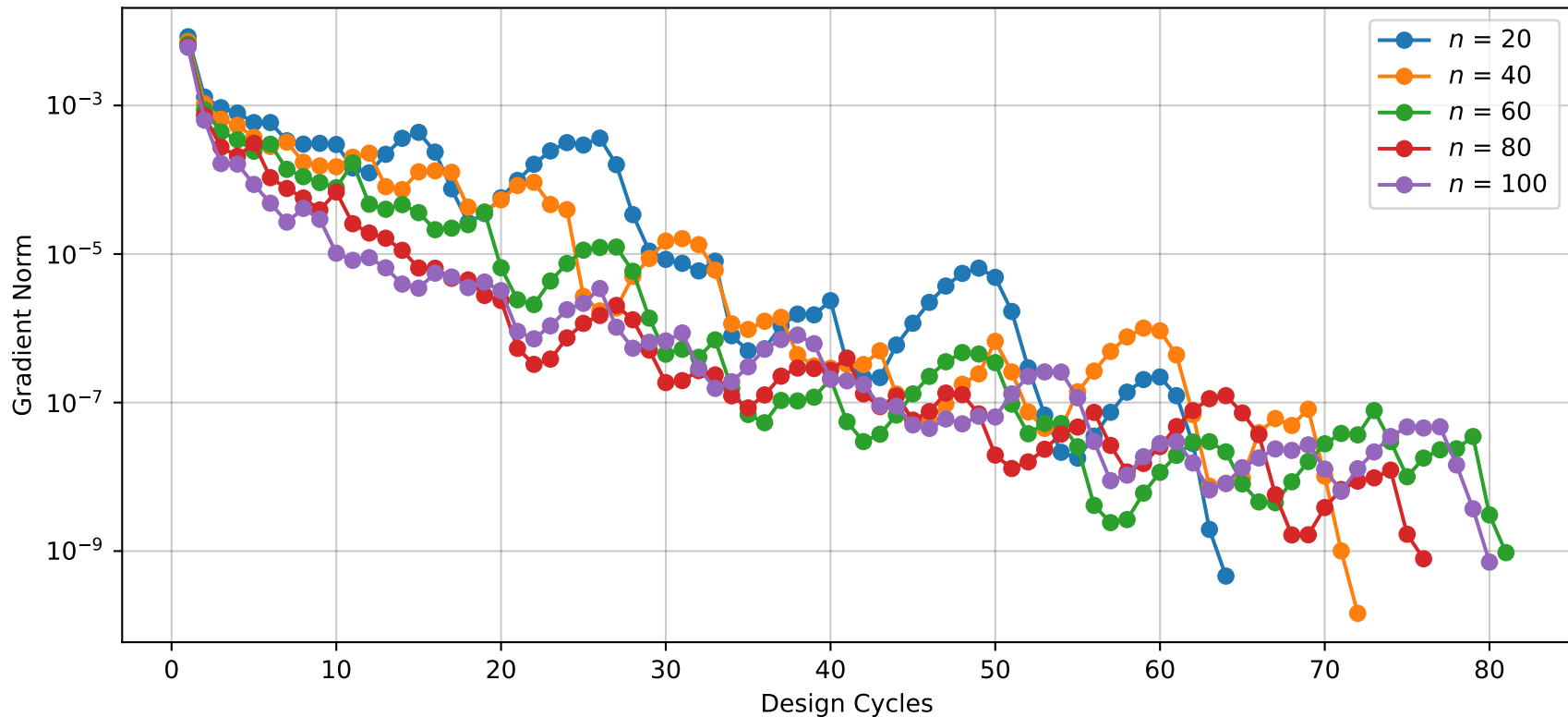
Reduced-space BFGS Gradient vs Design Cycles, $m = 4000$



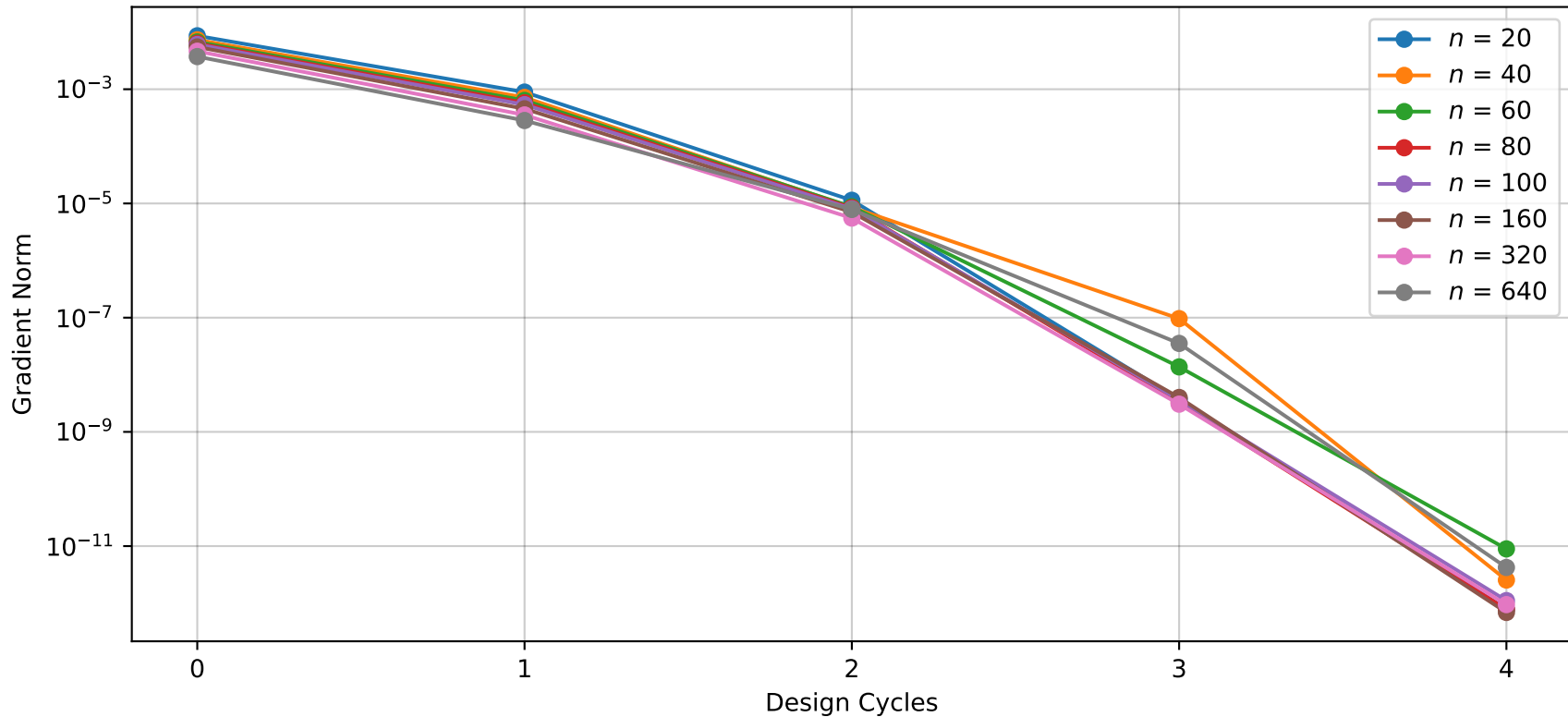
Reduced-space BFGS Gradient vs Design Cycles, $m = 9000$



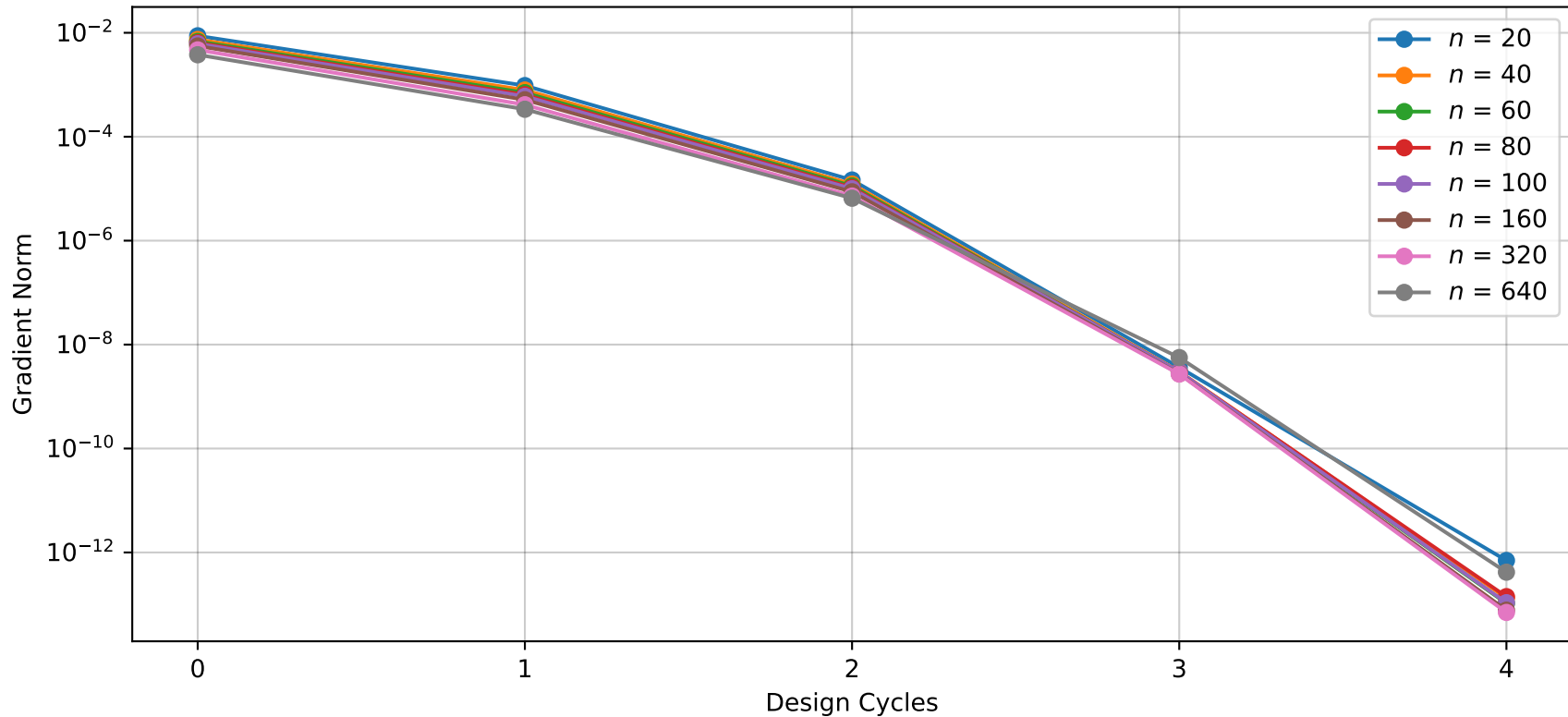
Reduced-space BFGS Gradient vs Design Cycles, $m = 16000$



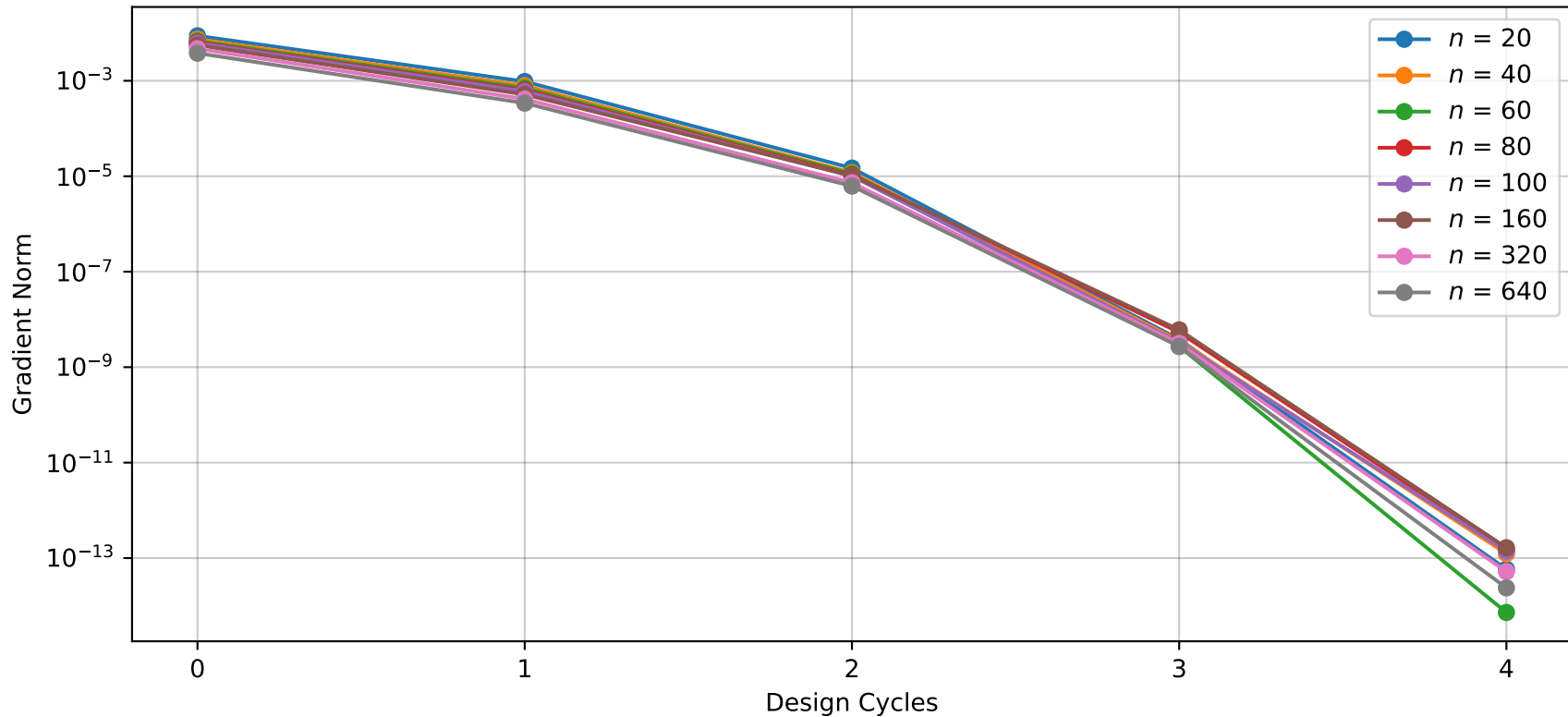
Reduced-space Newton Gradient vs Design Cycles, $m = 4000$



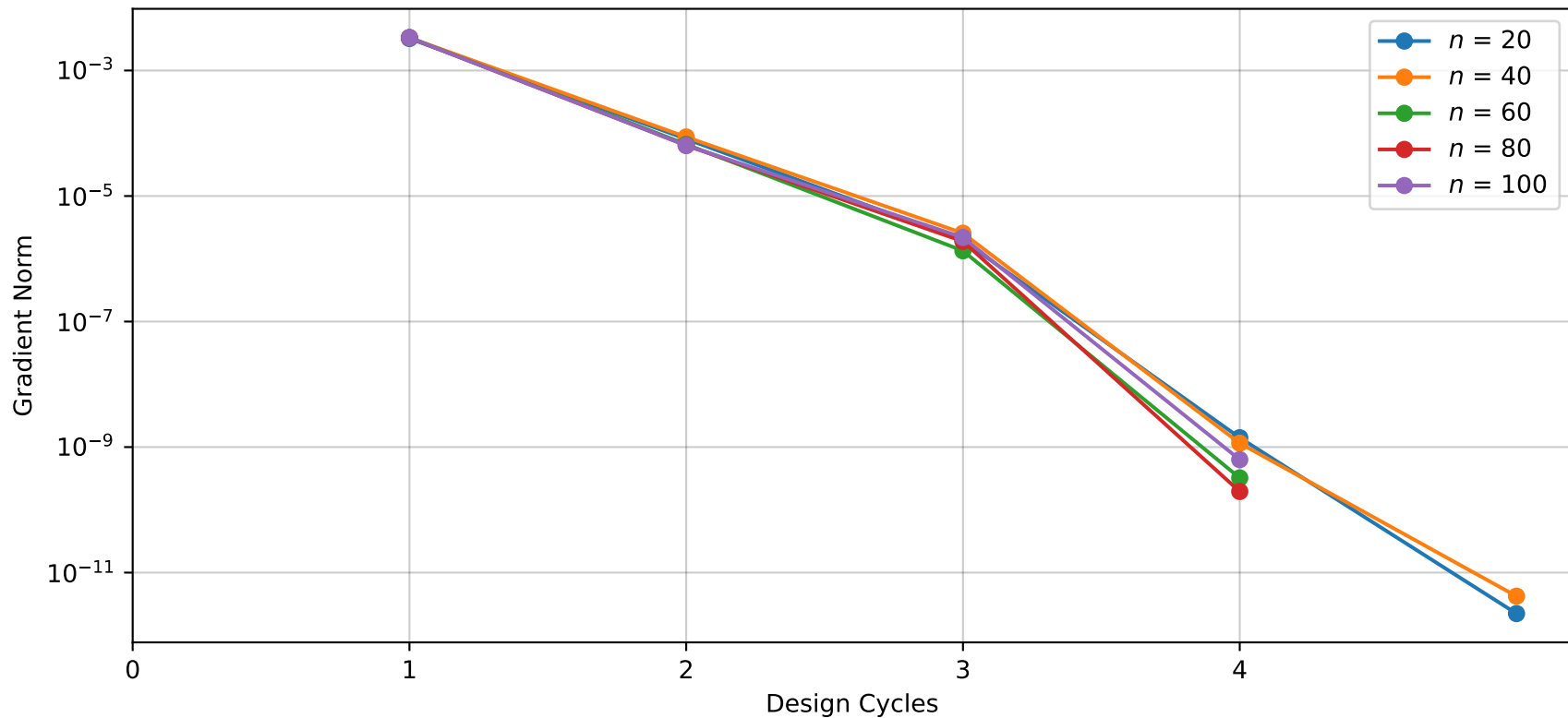
Reduced-space Newton Gradient vs Design Cycles, $m = 9000$



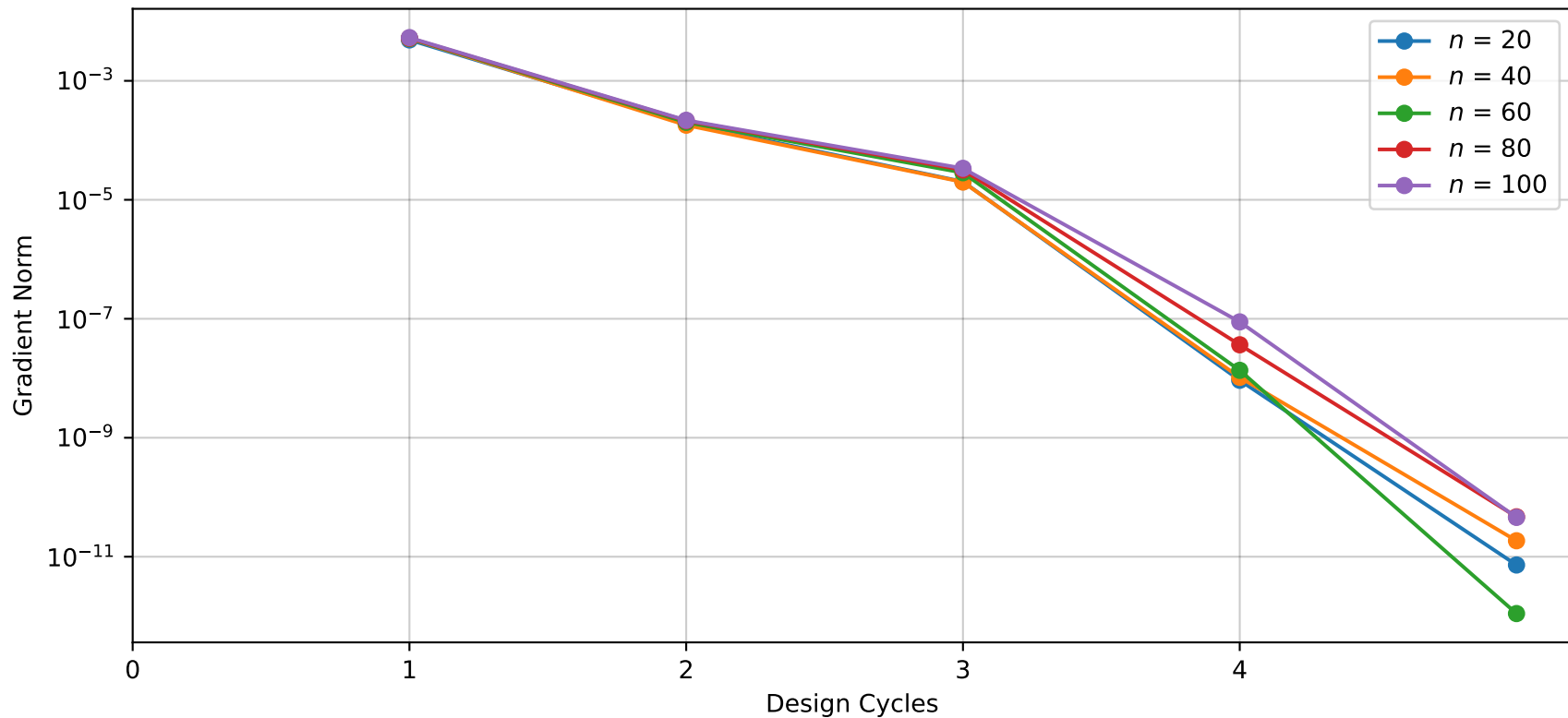
Reduced-space Newton Gradient vs Design Cycles, $m = 16000$



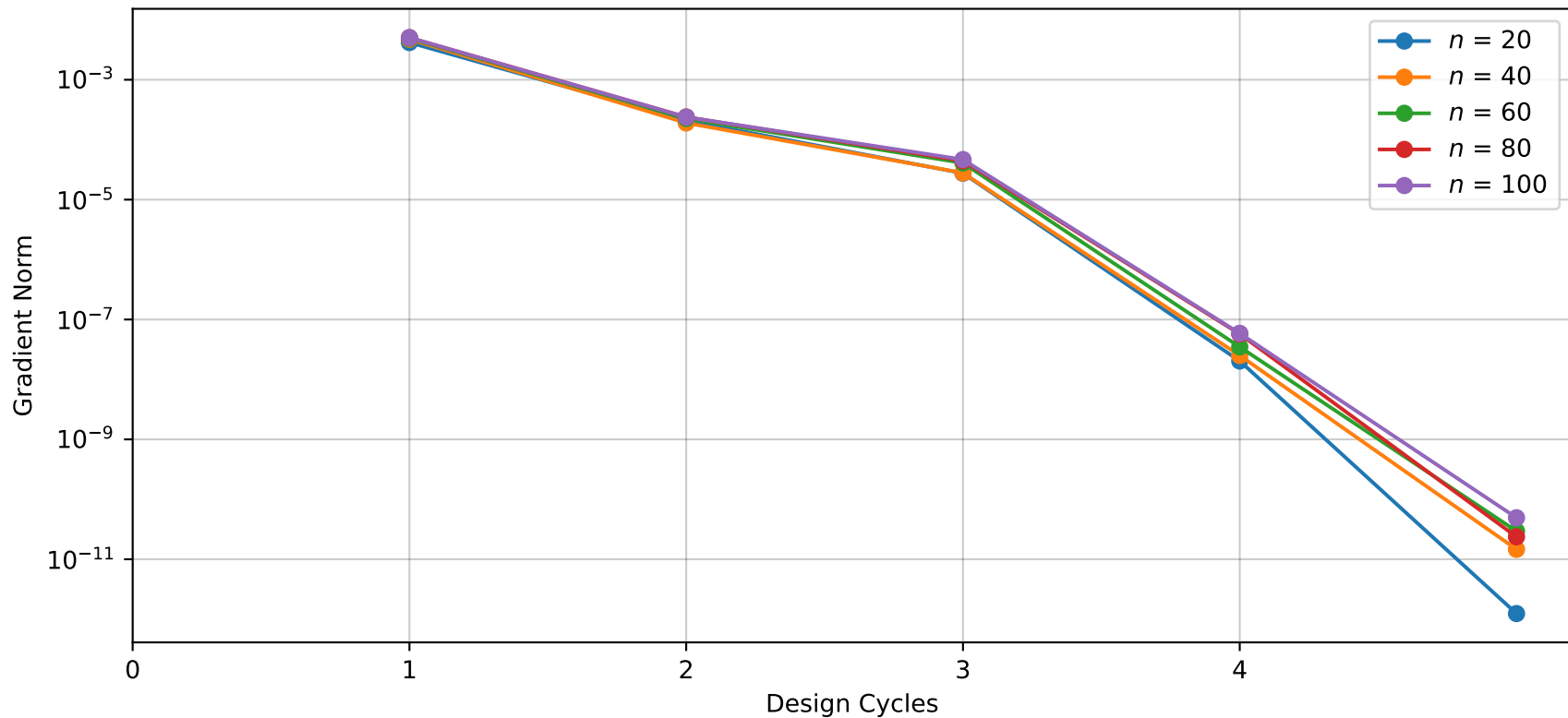
Full-space with \mathbf{P}_4 Gradient vs Design Cycles, $m = 4000$



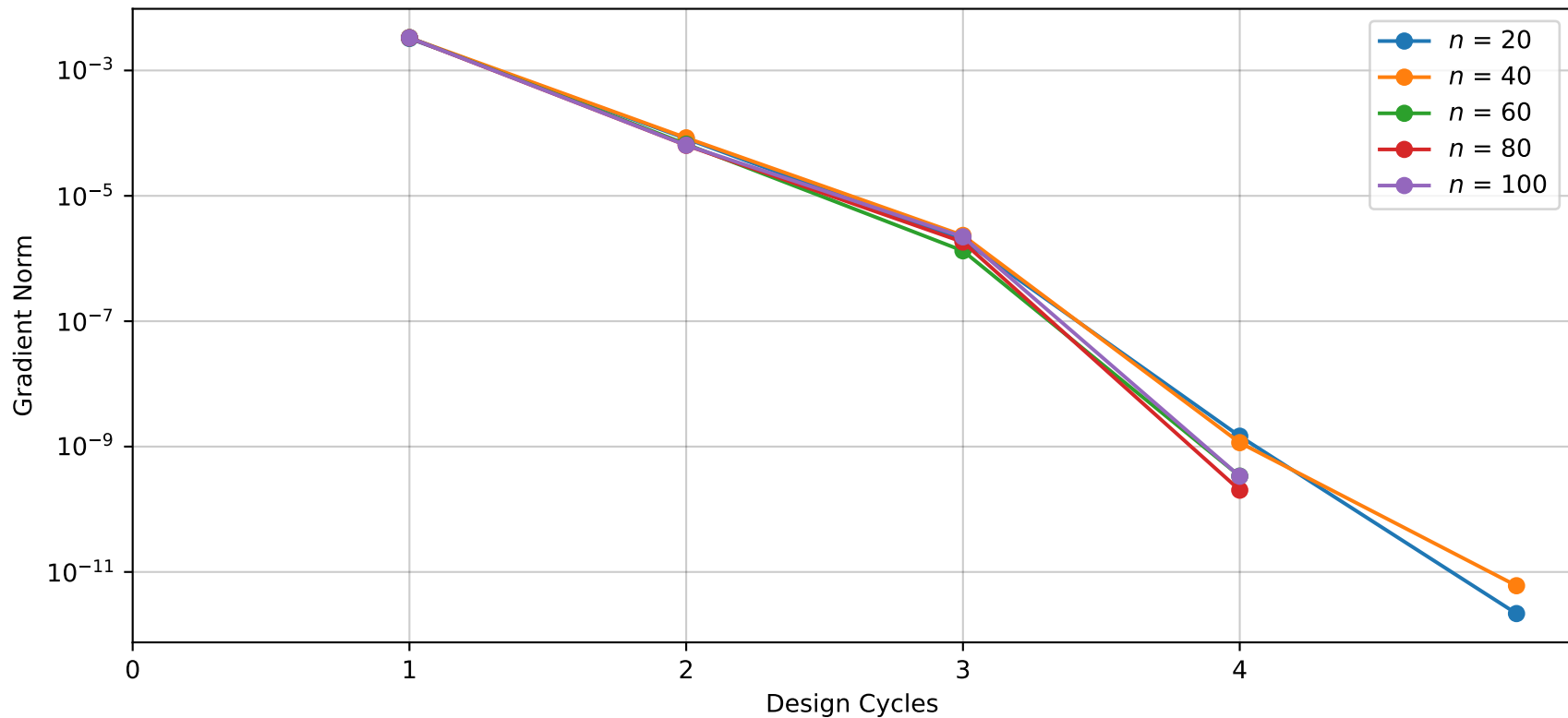
Full-space with \mathbf{P}_4 Gradient vs Design Cycles, $m = 9000$



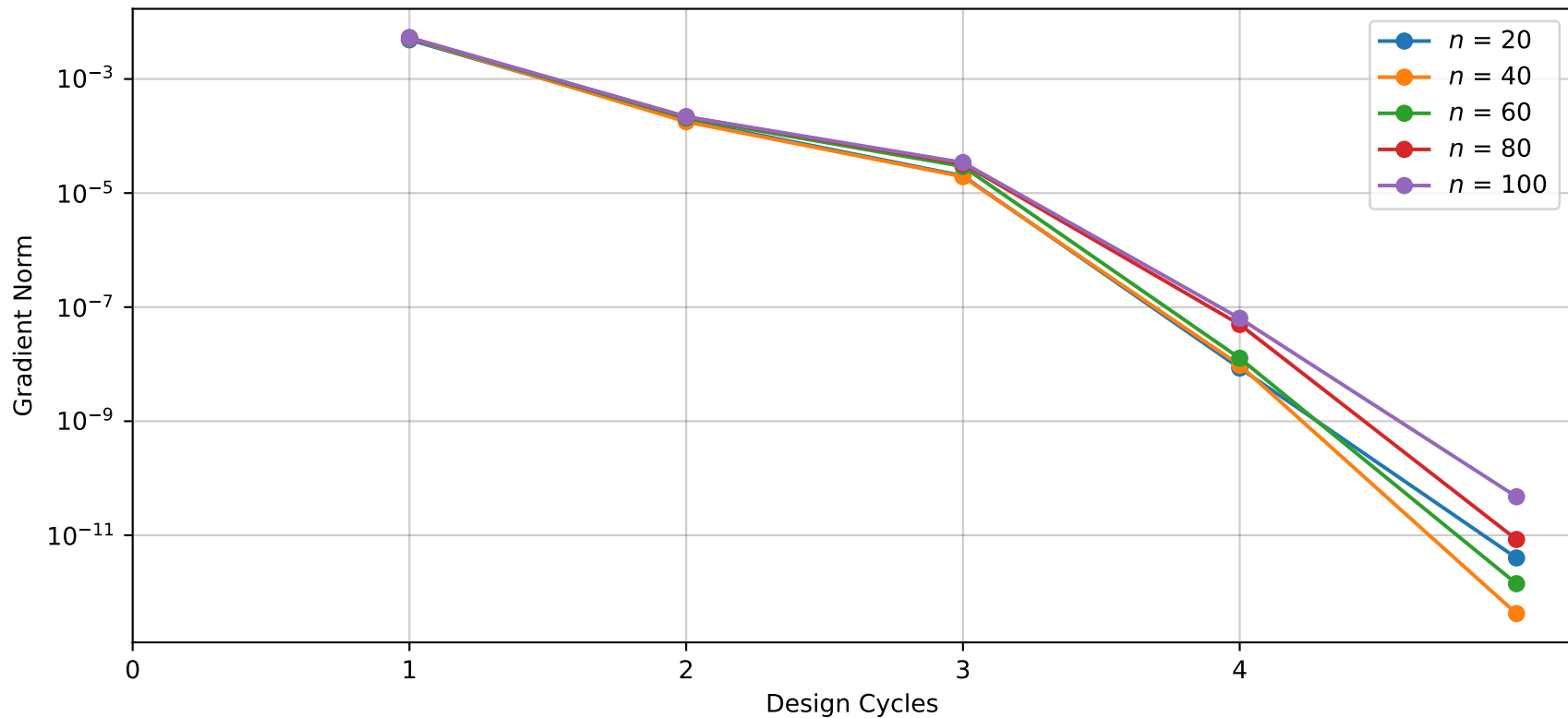
Full-space with \mathbf{P}_4 Gradient vs Design Cycles, $m = 16000$



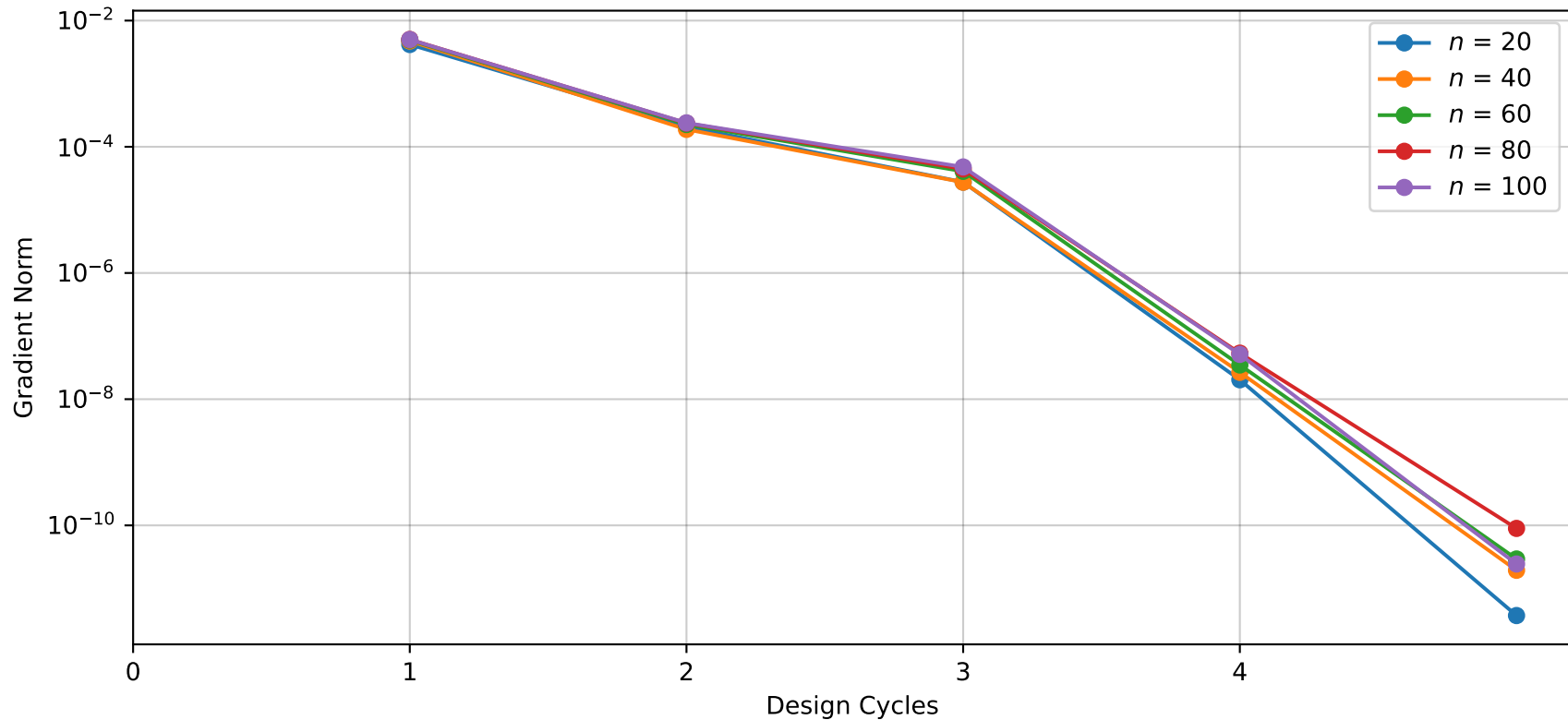
Full-space with \mathbf{P}_2 Gradient vs Design Cycles, $m = 4000$



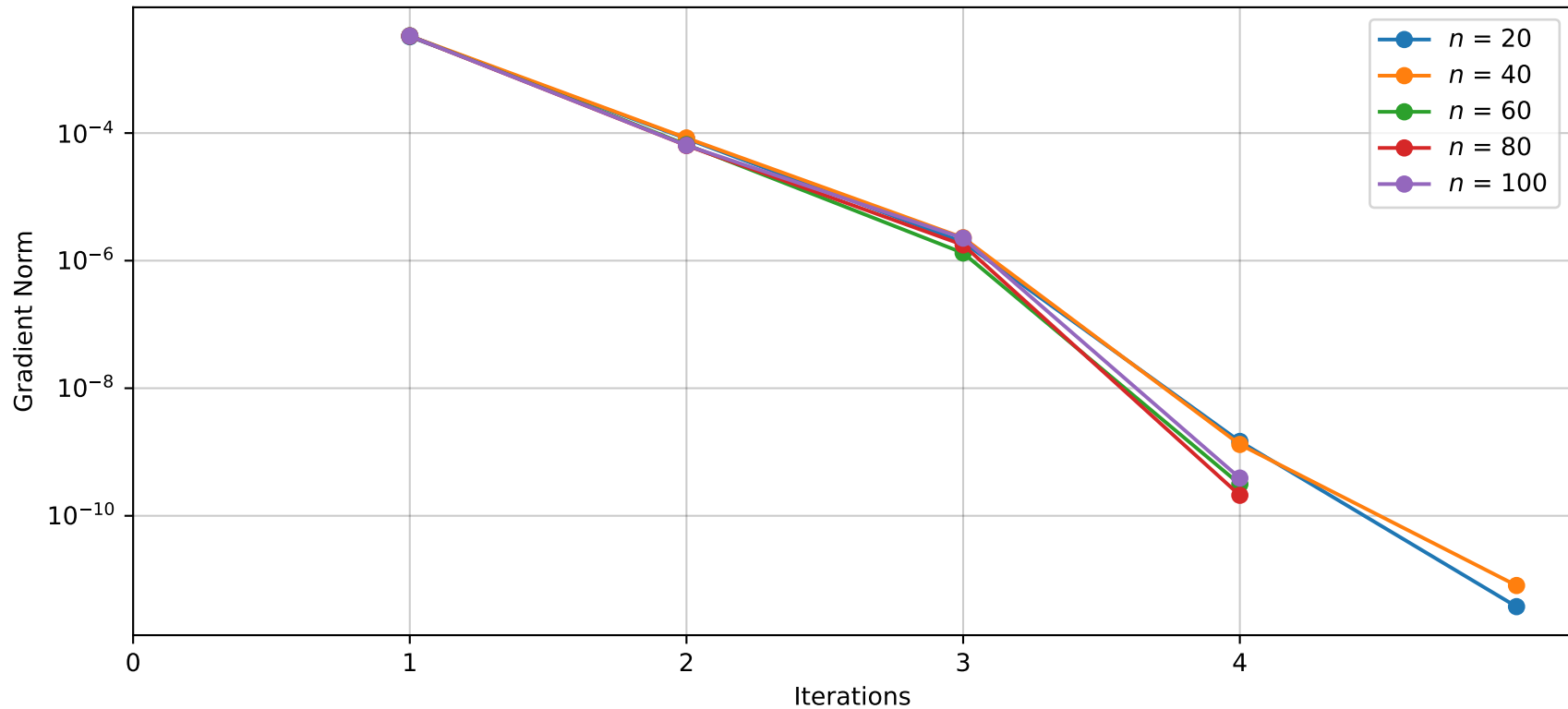
Full-space with \mathbf{P}_2 Gradient vs Design Cycles, $m = 9000$



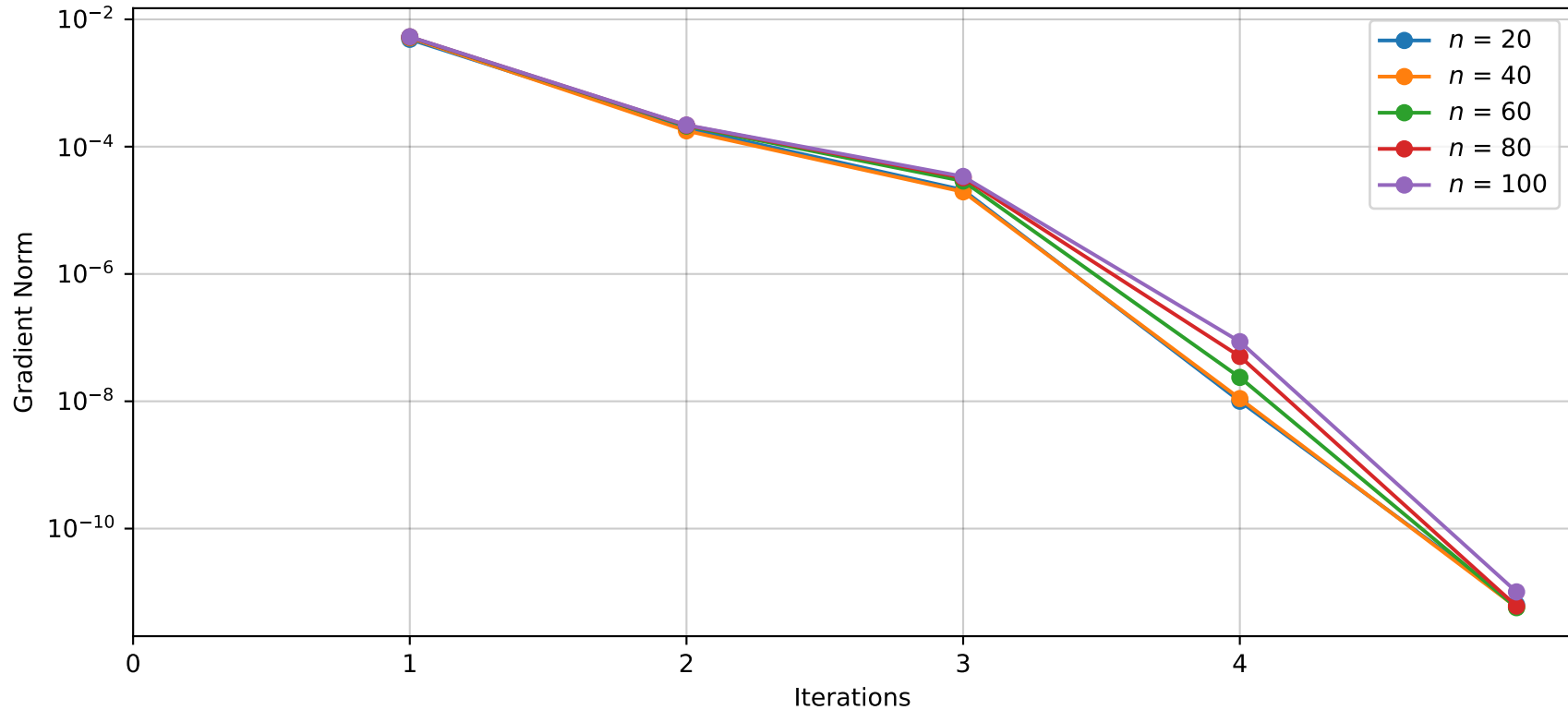
Full-space with \mathbf{P}_2 Gradient vs Design Cycles, $m = 16000$



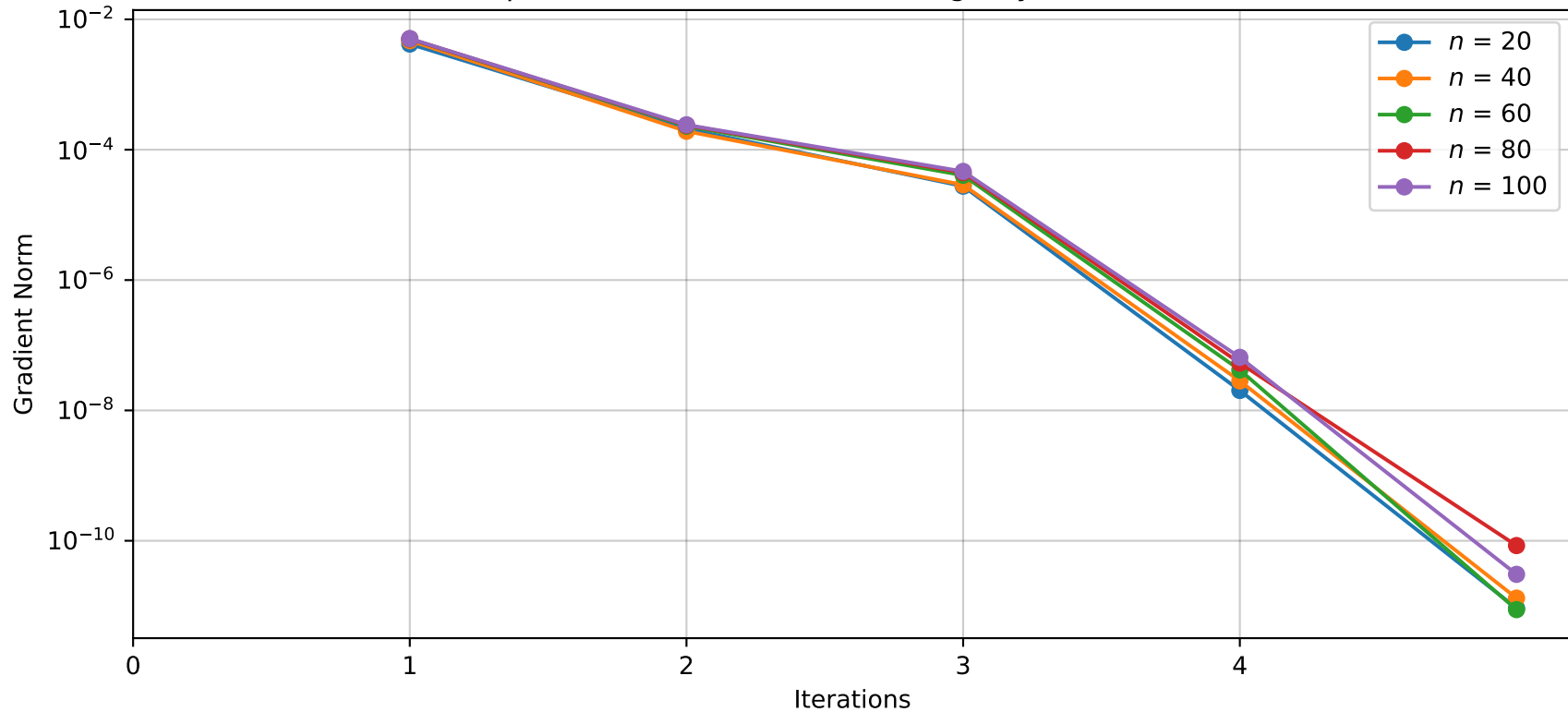
Full-space with $\tilde{\mathbf{P}}_4$ Gradient vs Design Cycles, $m = 4000$



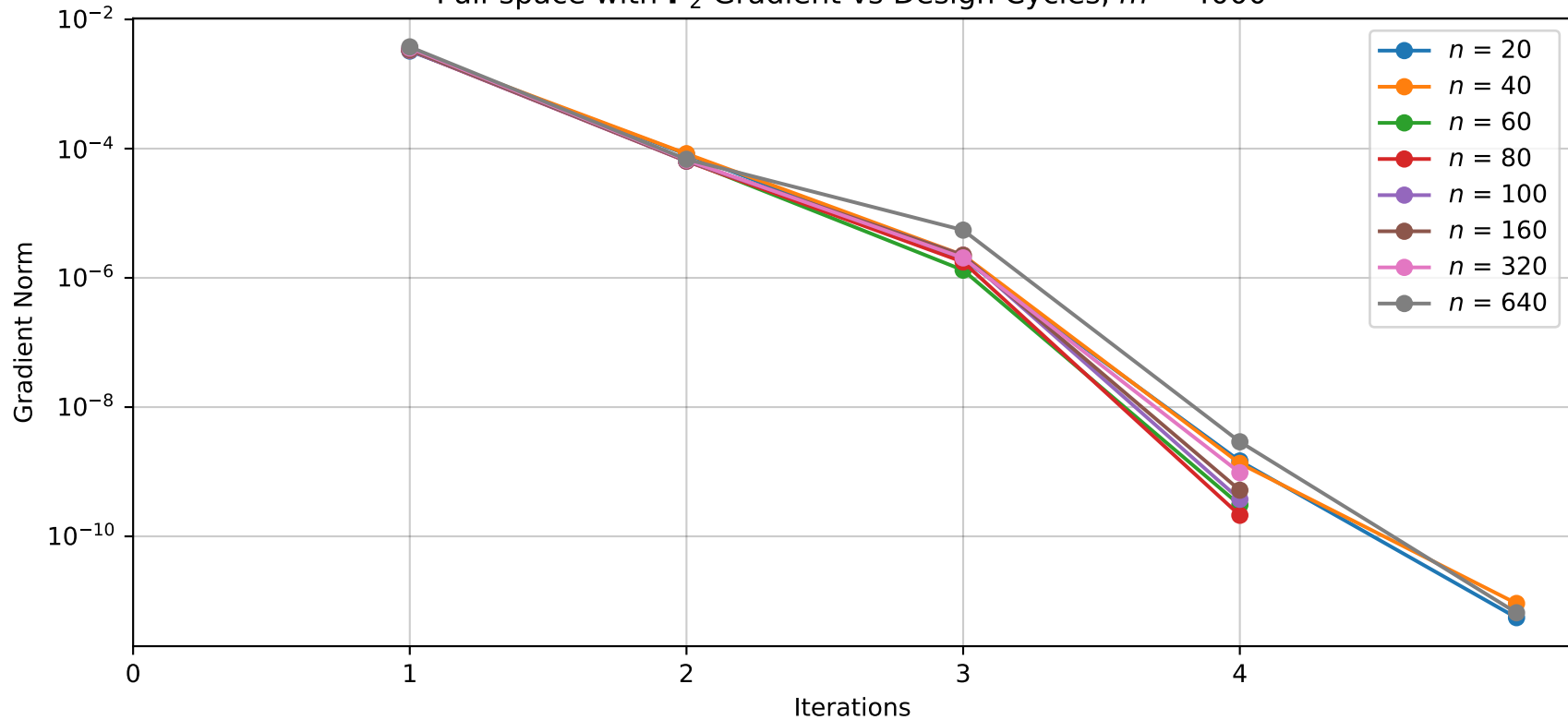
Full-space with $\tilde{\mathbf{P}}_4$ Gradient vs Design Cycles, $m = 9000$



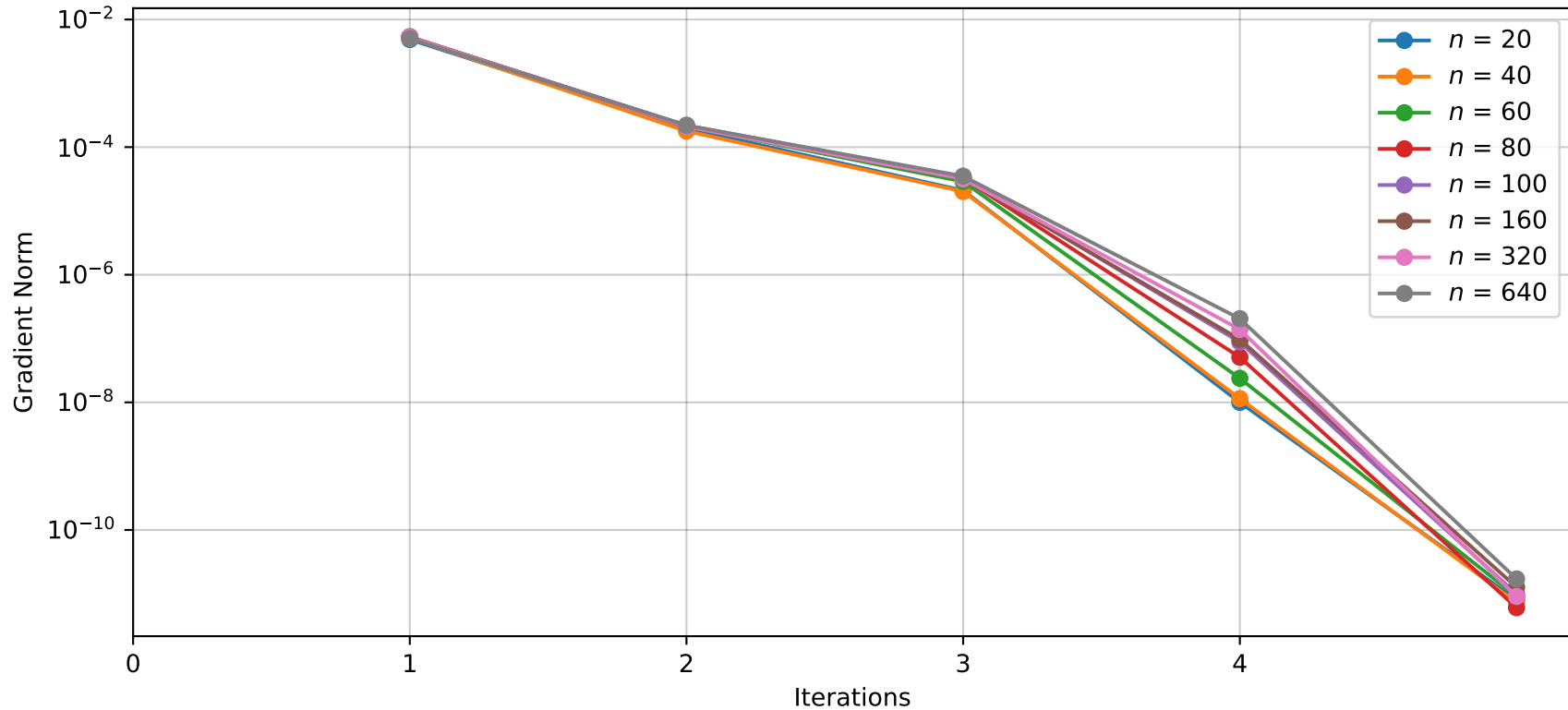
Full-space with $\tilde{\mathbf{P}}_4$ Gradient vs Design Cycles, $m = 16000$



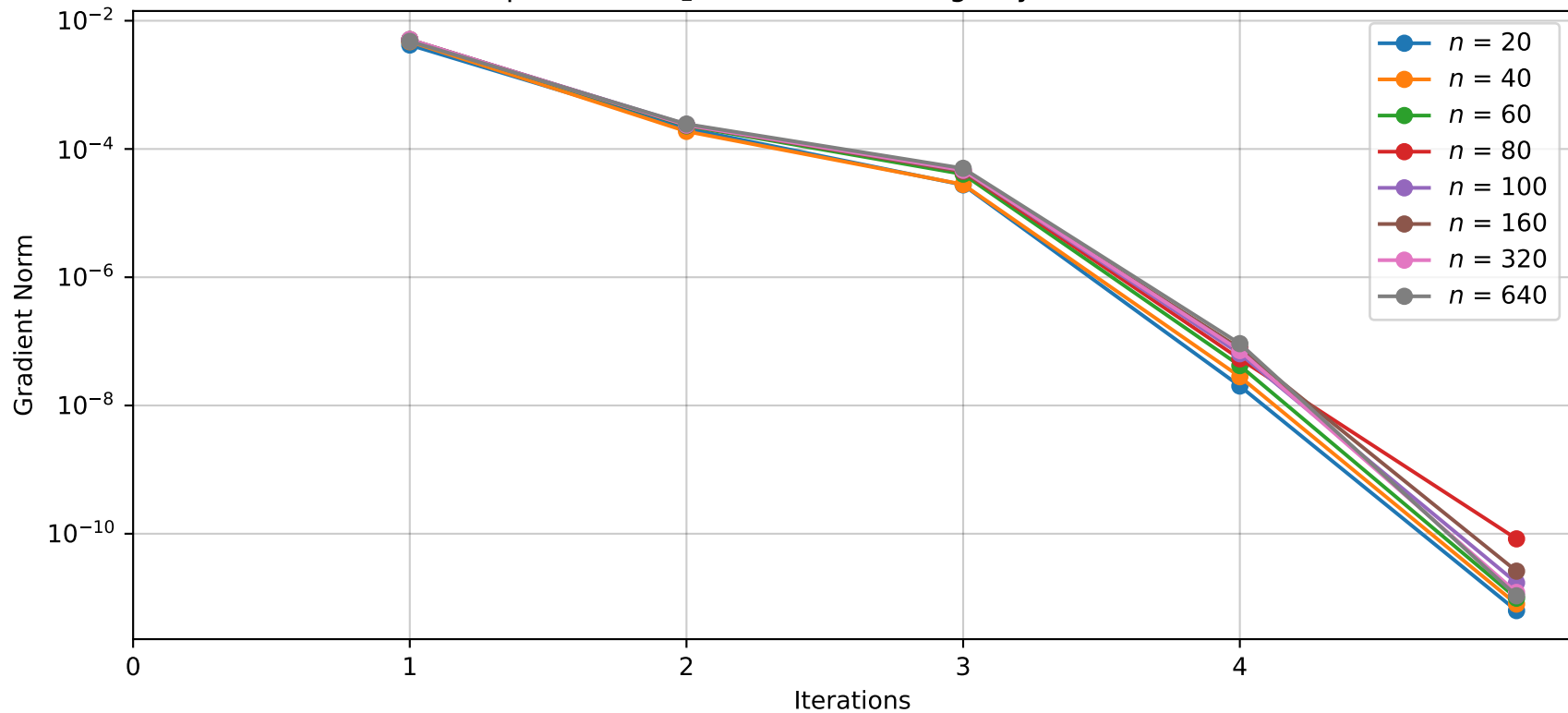
Full-space with $\tilde{\mathbf{P}}_2$ Gradient vs Design Cycles, $m = 4000$



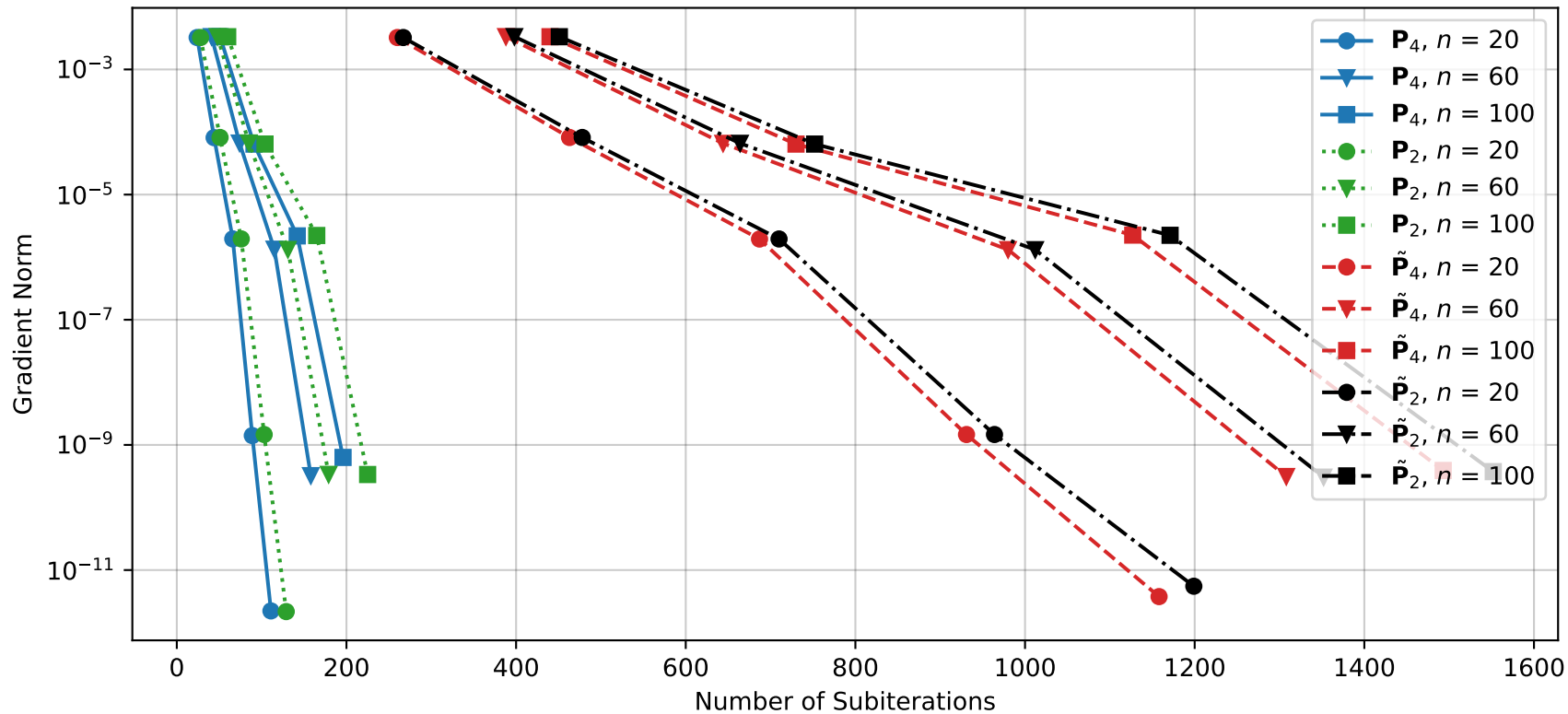
Full-space with $\tilde{\mathbf{P}}_2$ Gradient vs Design Cycles, $m = 9000$



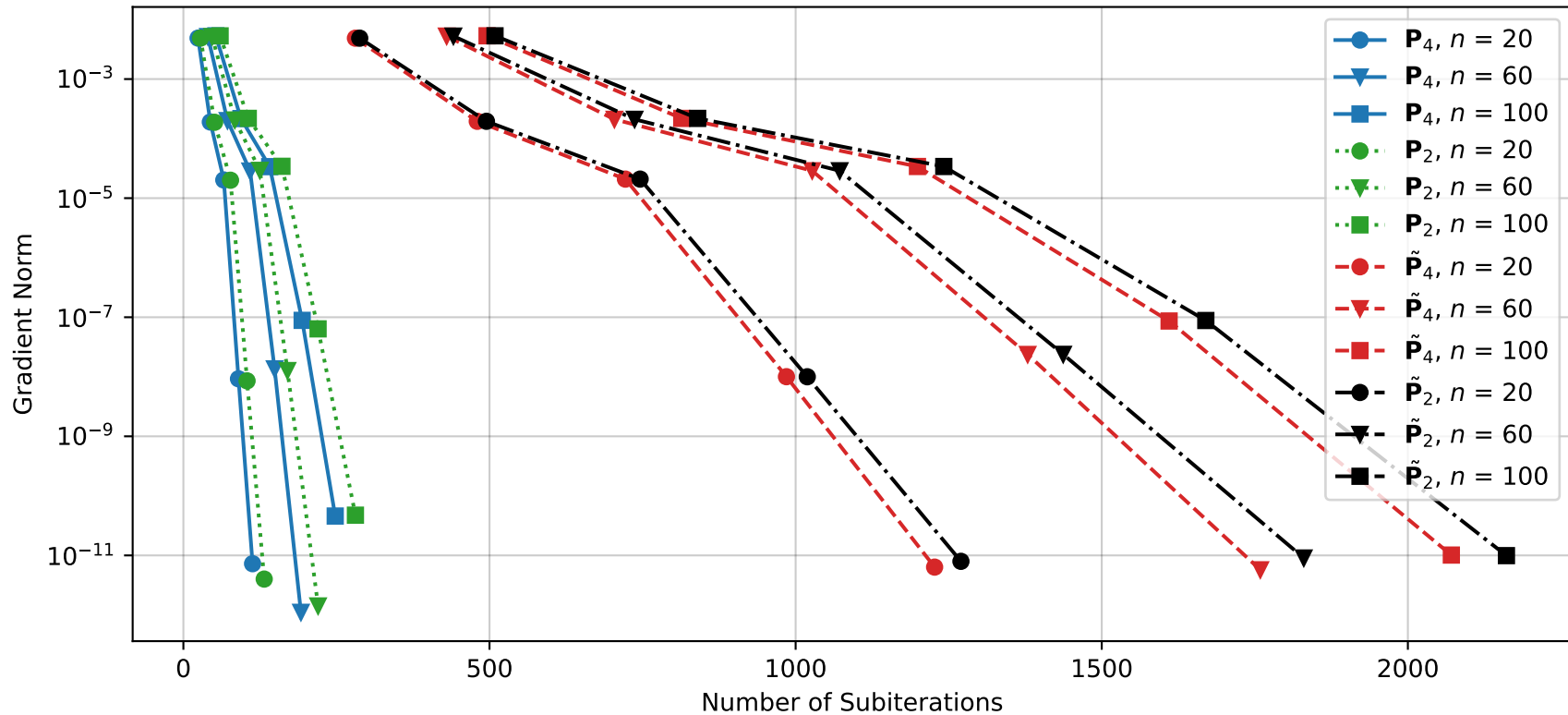
Full-space with $\tilde{\mathbf{P}}_2$ Gradient vs Design Cycles, $m = 16000$



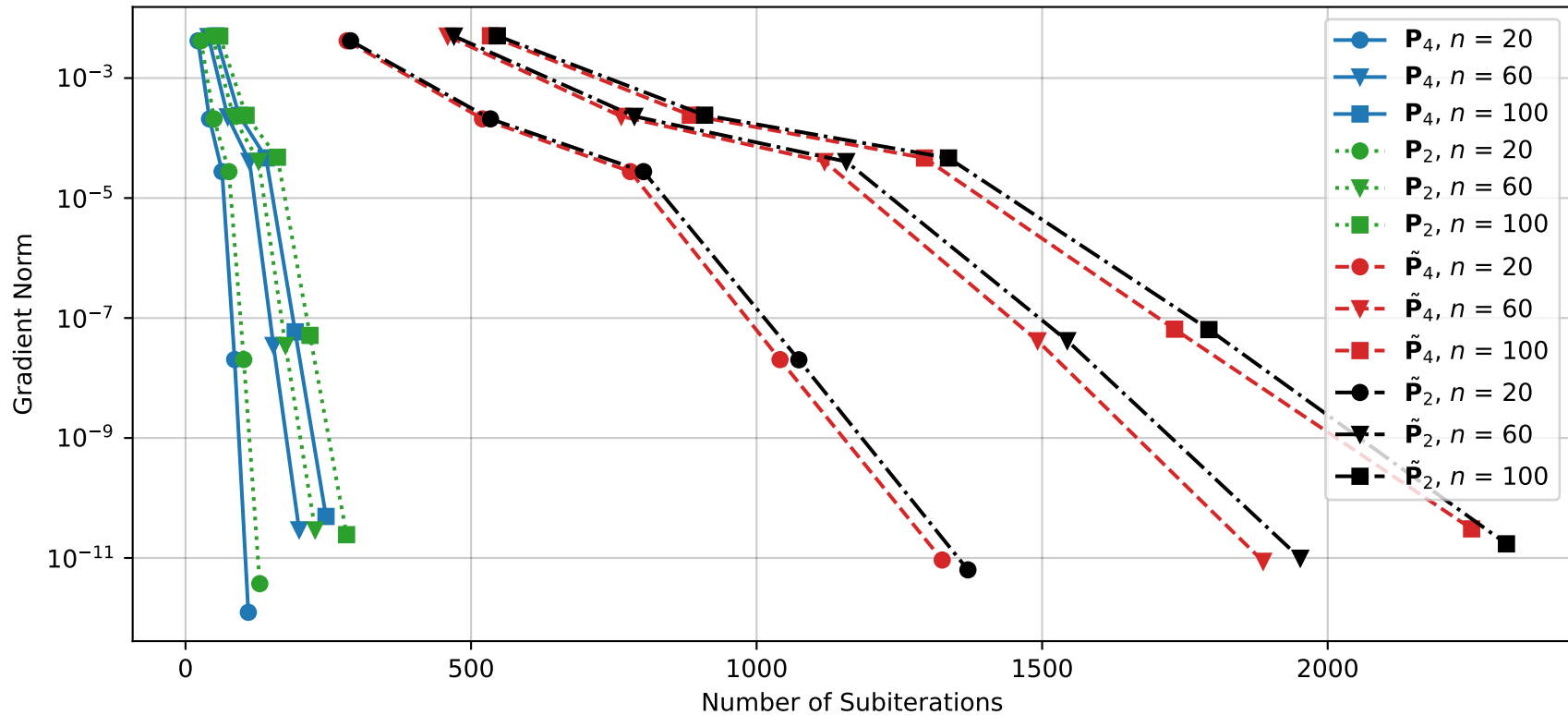
Full-space Gradient vs Subiterations, $m = 4000$

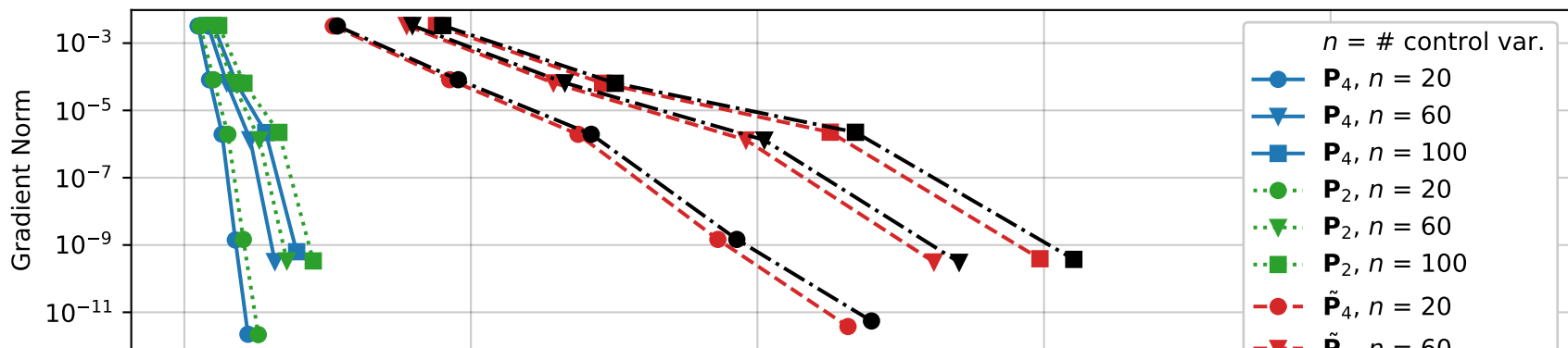
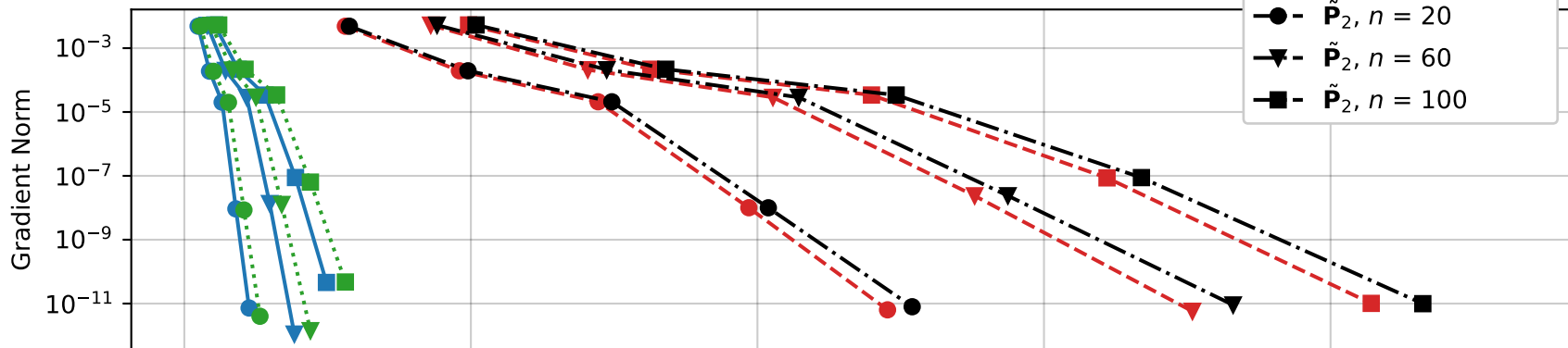
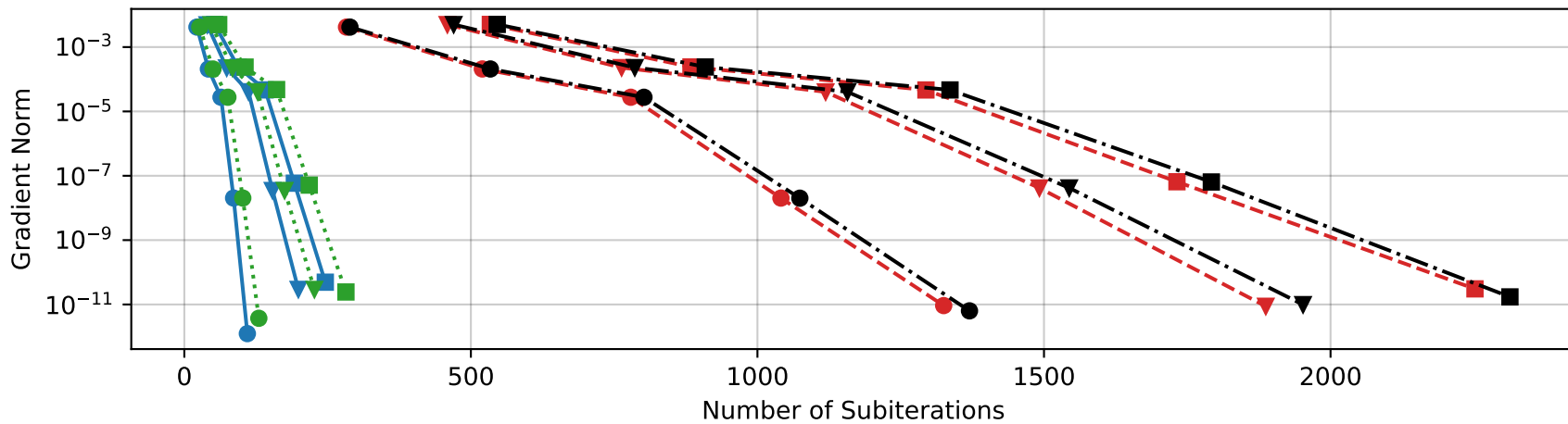


Full-space Gradient vs Subiterations, $m = 9000$

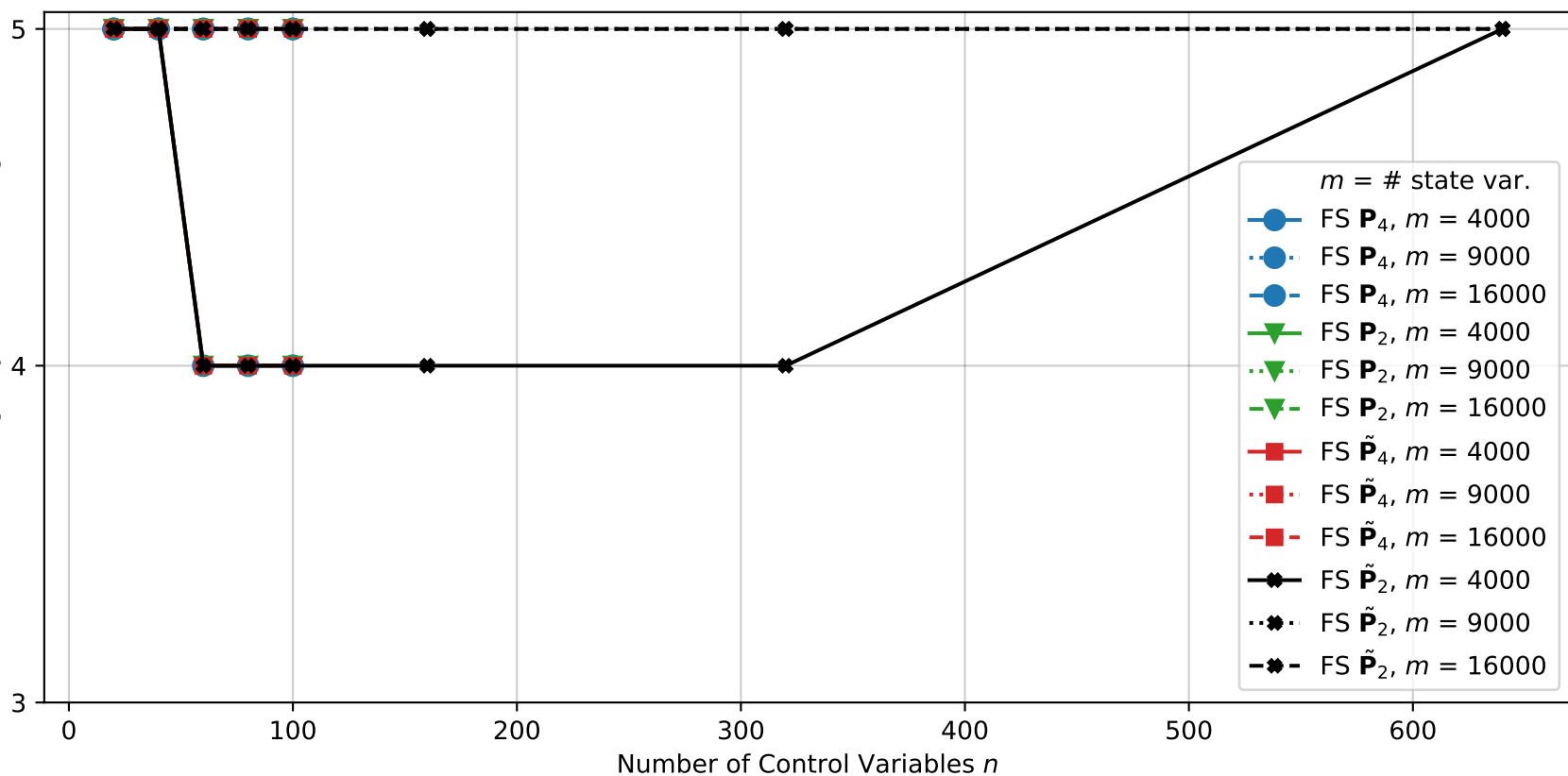


Full-space Gradient vs Subiterations, $m = 16000$

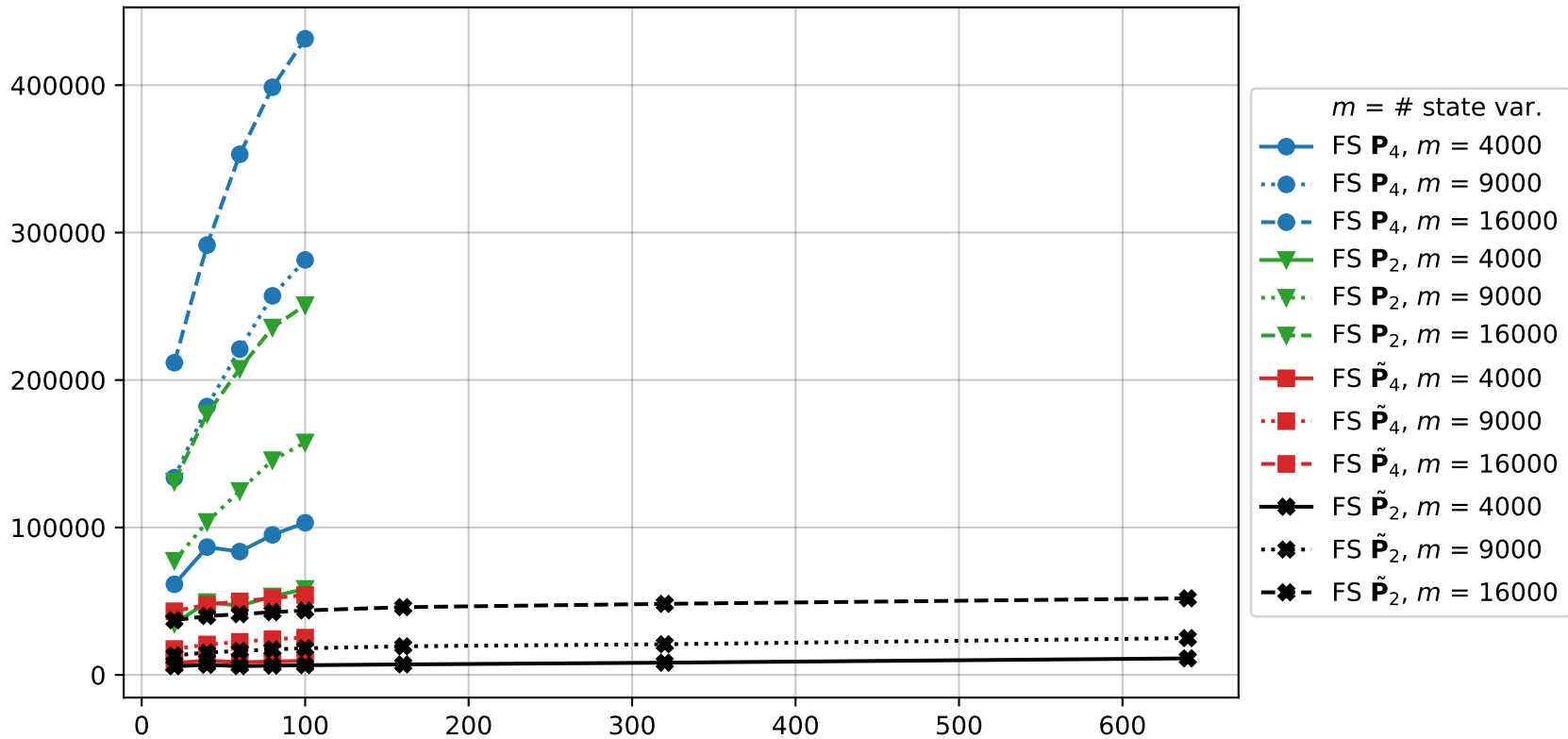


State Variables, $m = 4000$ State Variables, $m = 9000$ State Variables, $m = 16000$ 

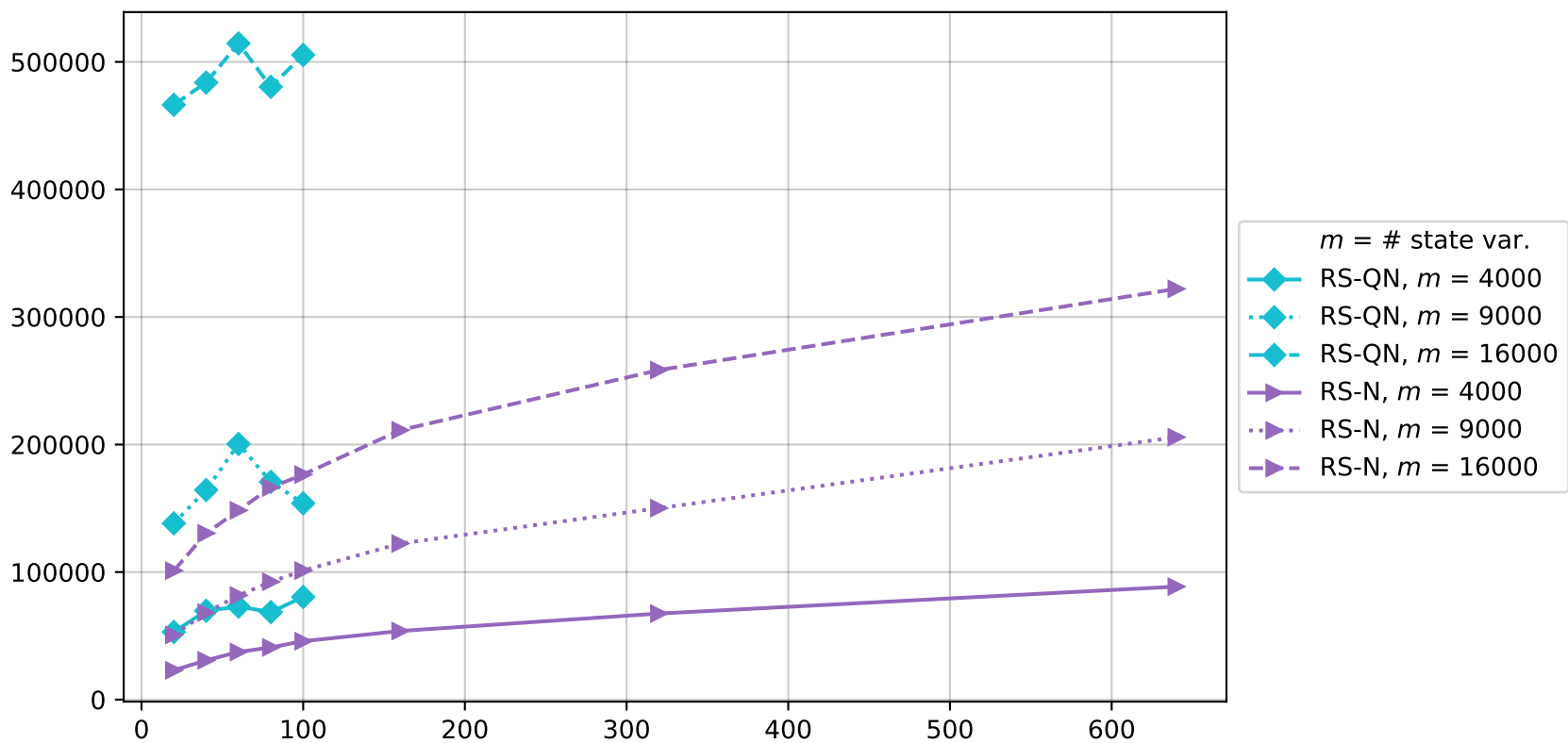
Number of Design Cycles to Convergence

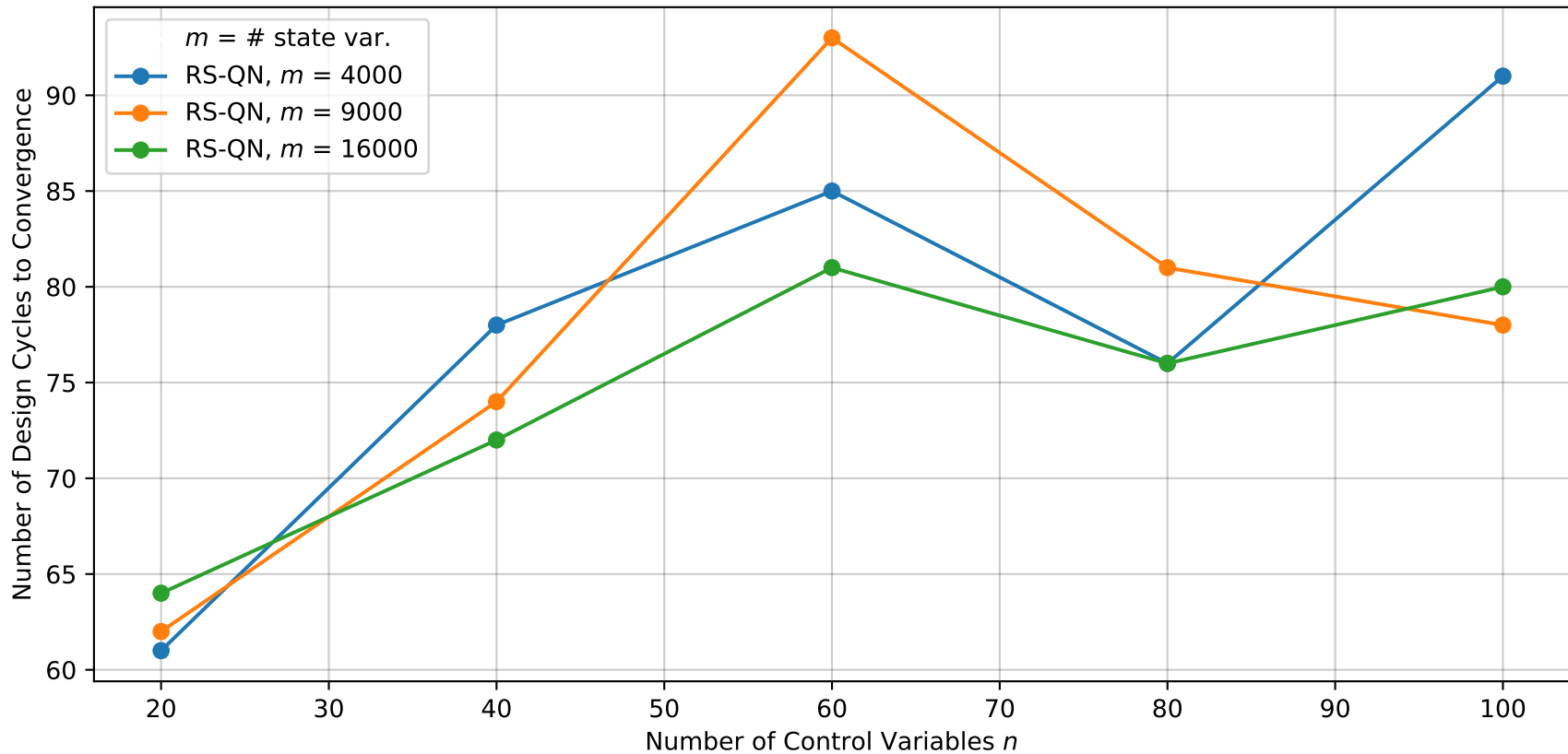


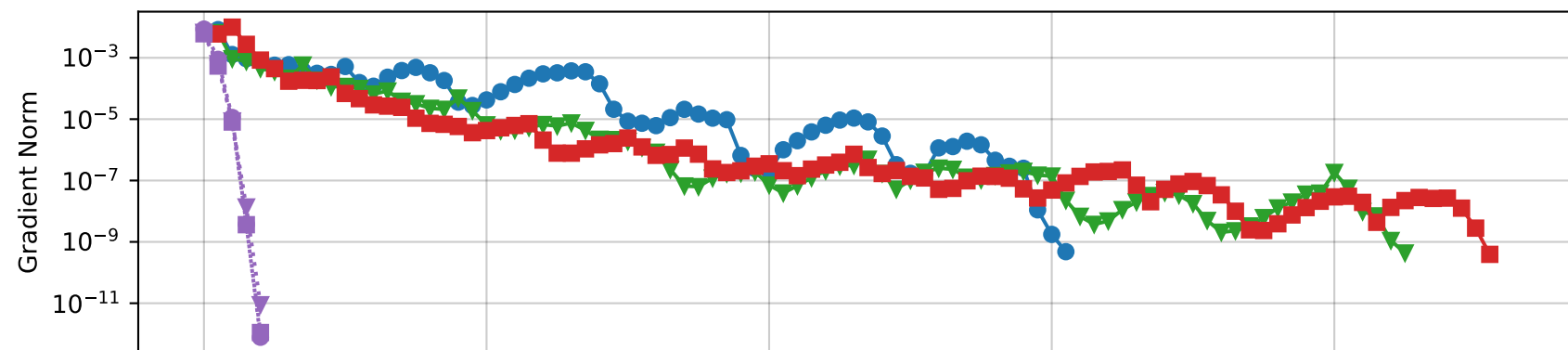
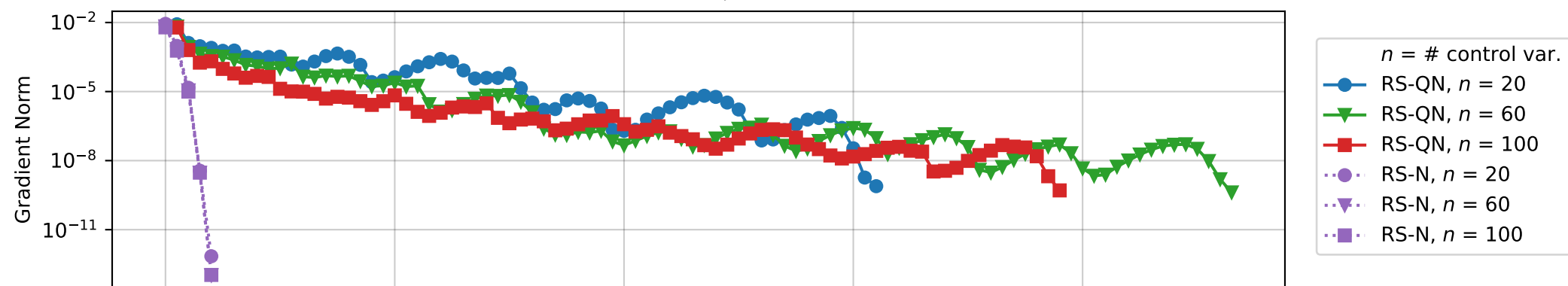
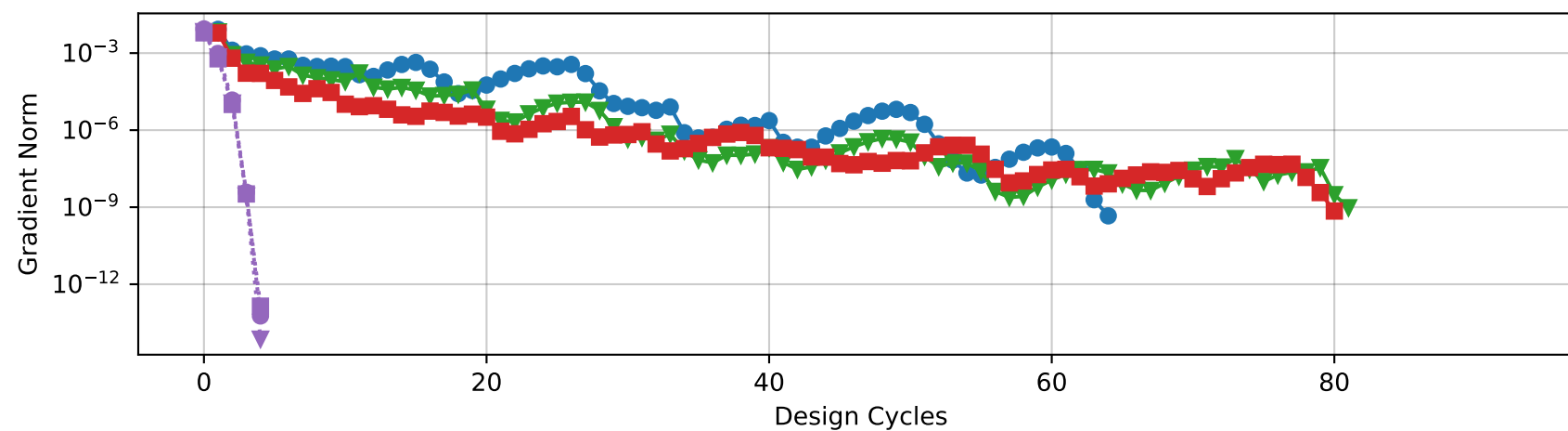
Work Units to Convergence

Number of Control Variables n 

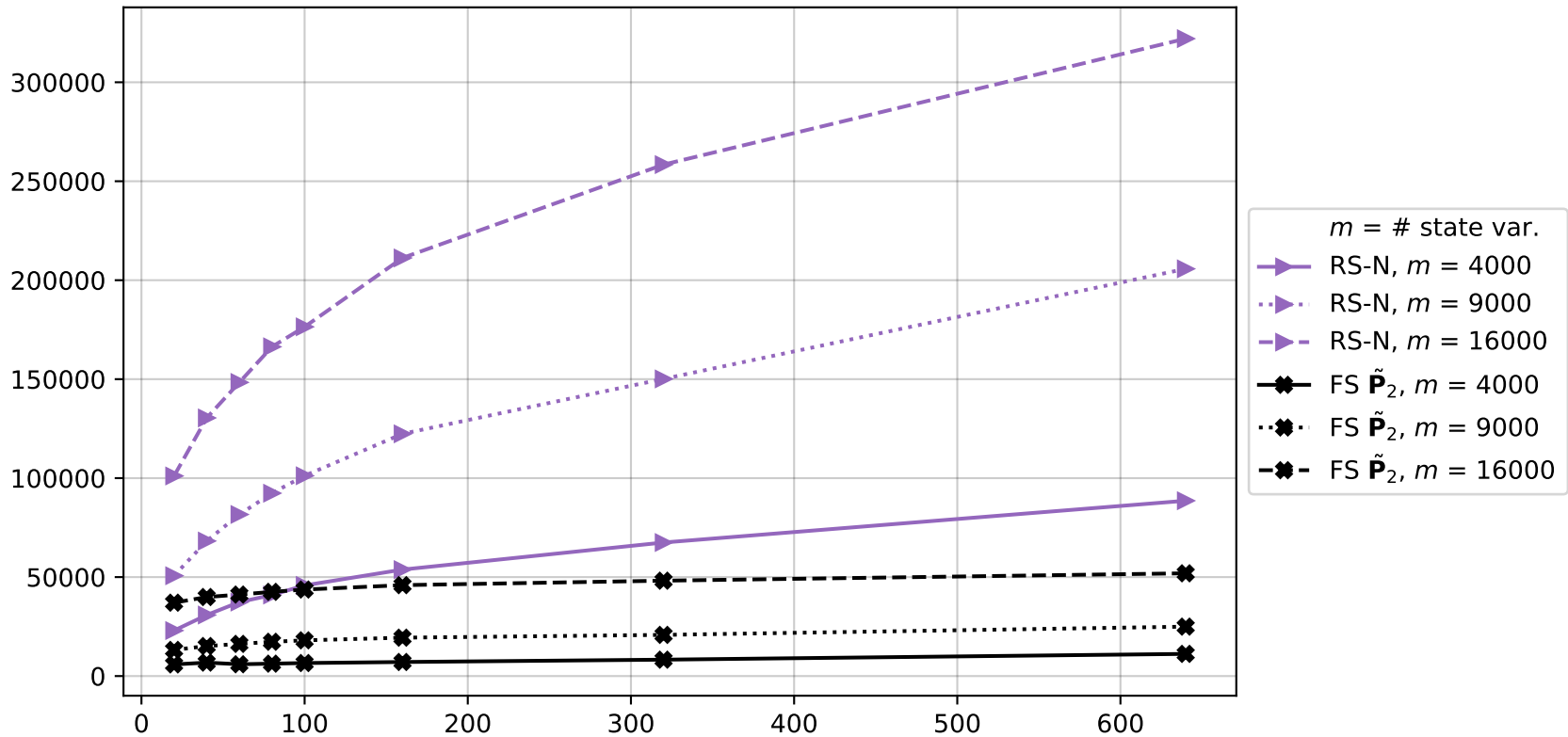
Work Units to Convergence

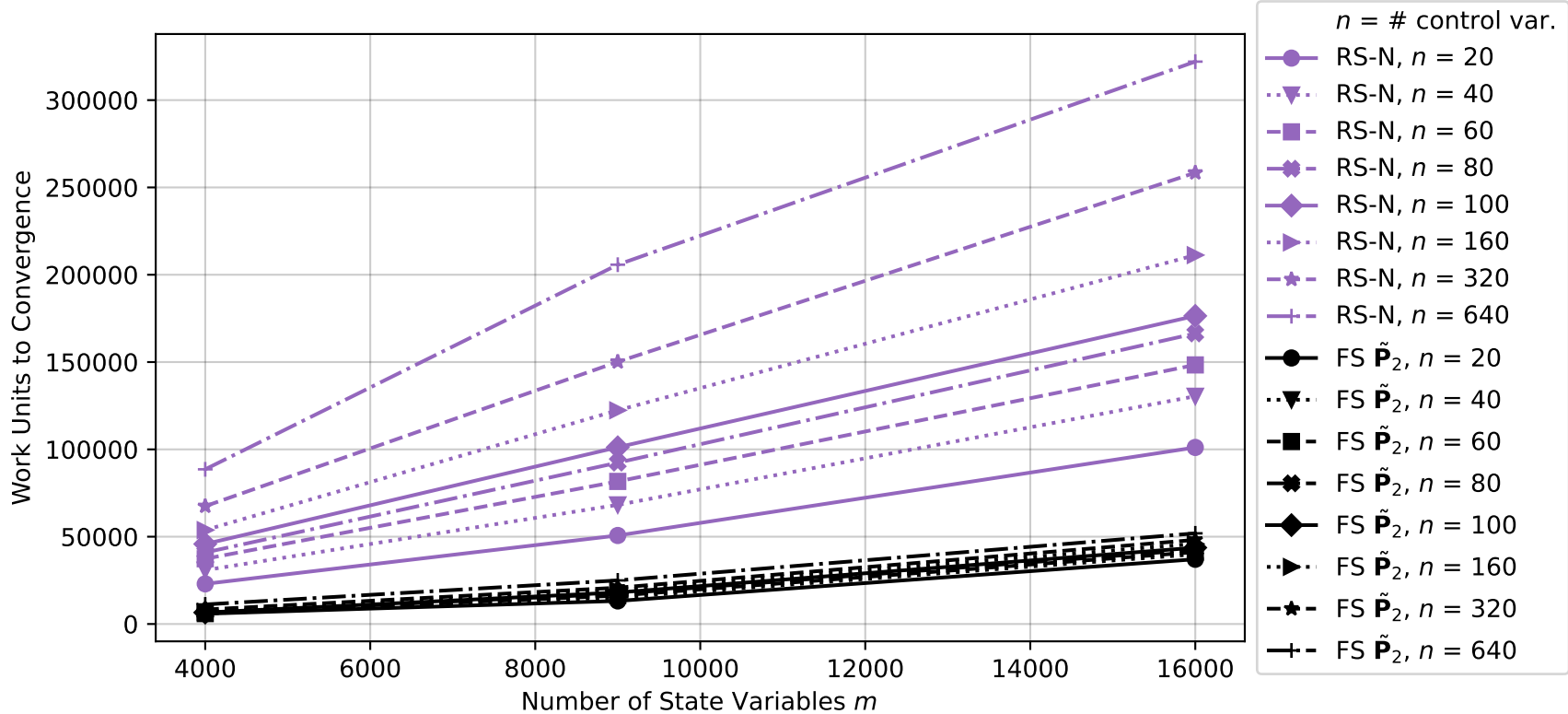
Number of Control Variables n 



State Variables, $m = 4000$ State Variables, $m = 9000$ State Variables, $m = 16000$ 

Work Units to Convergence

Number of Control Variables n 



Gradient Norm vs Design Cycles $m = 4000$

