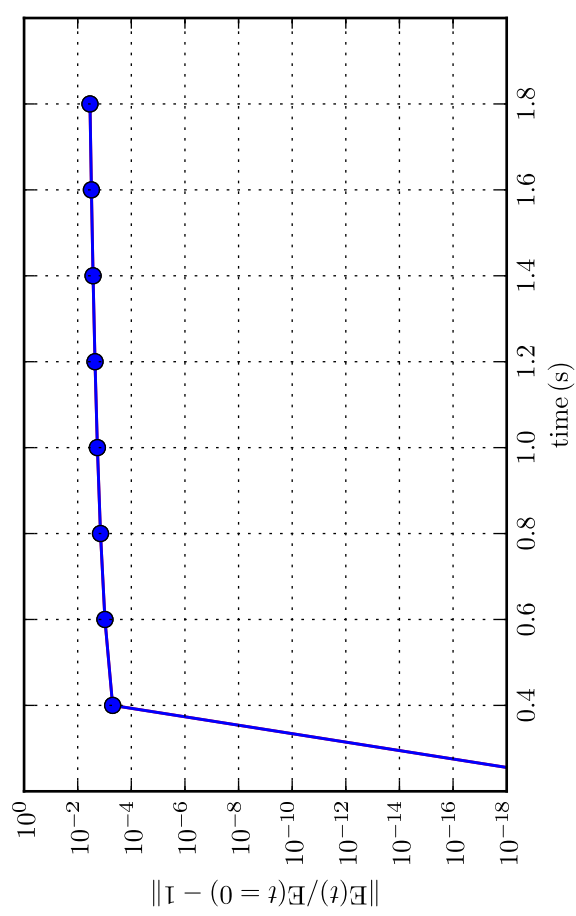
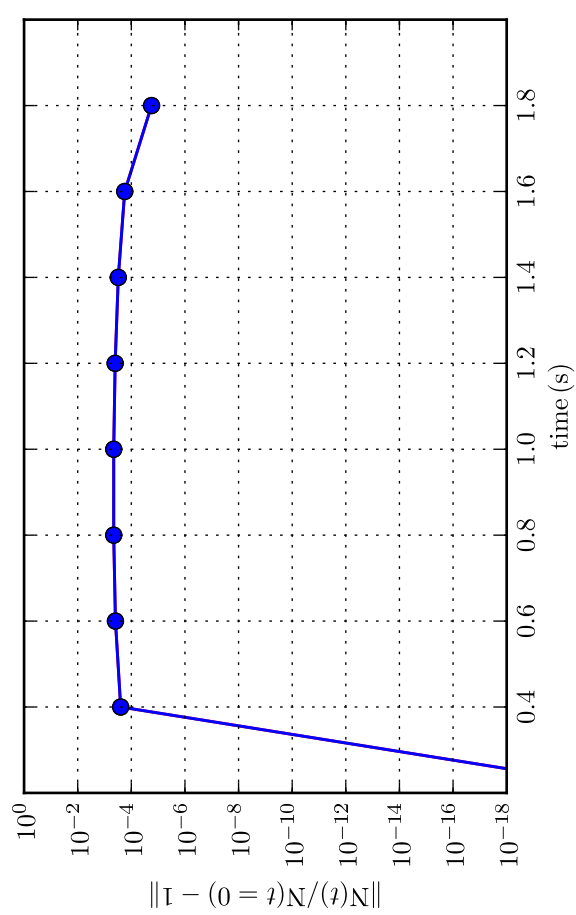
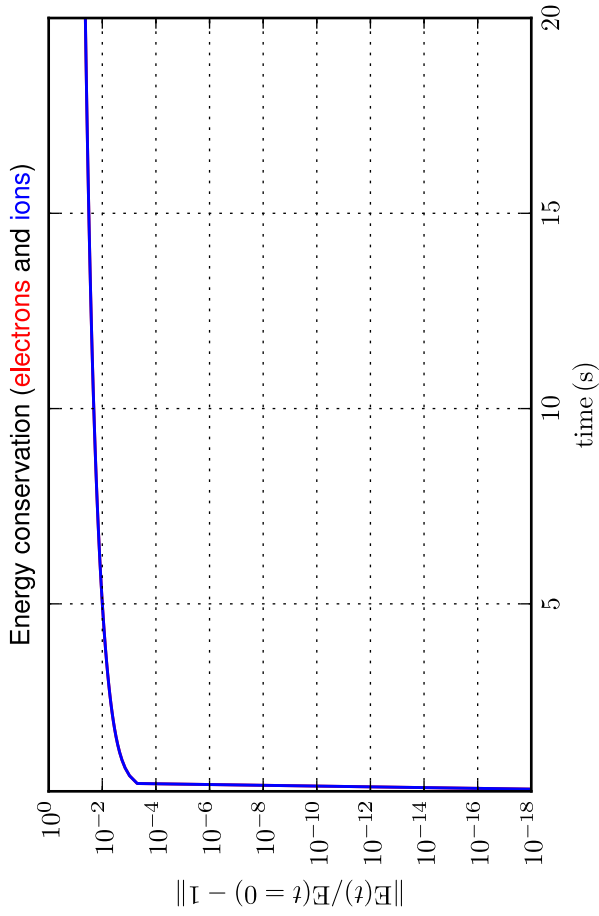
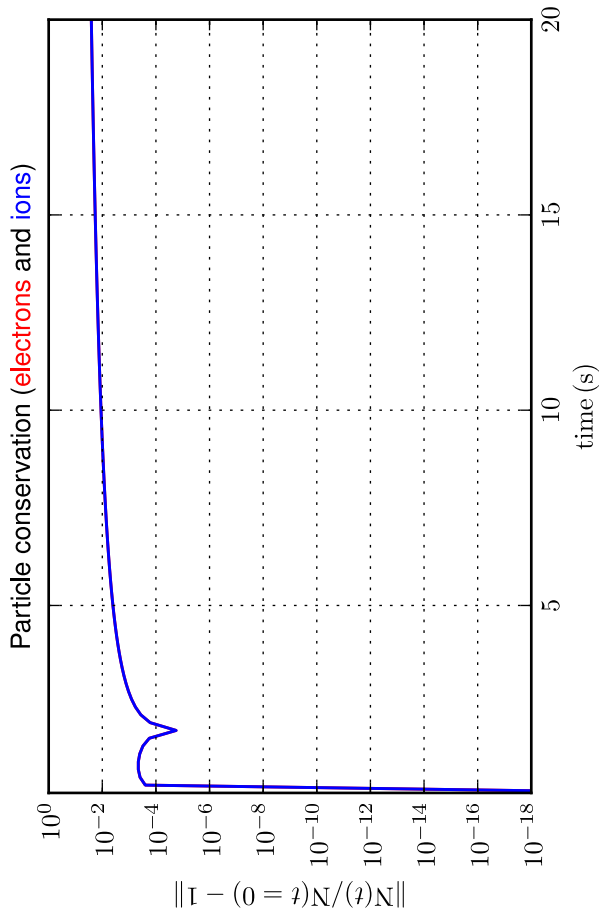
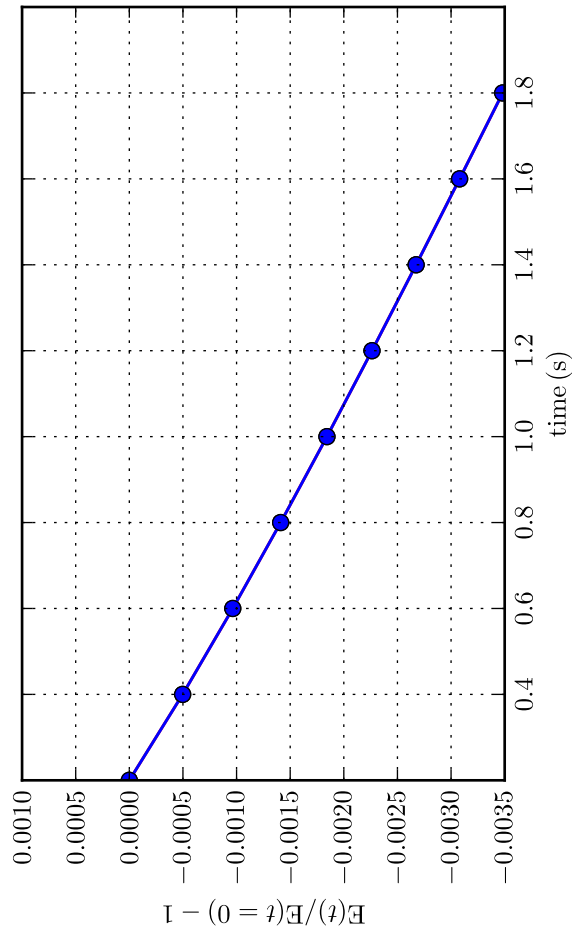
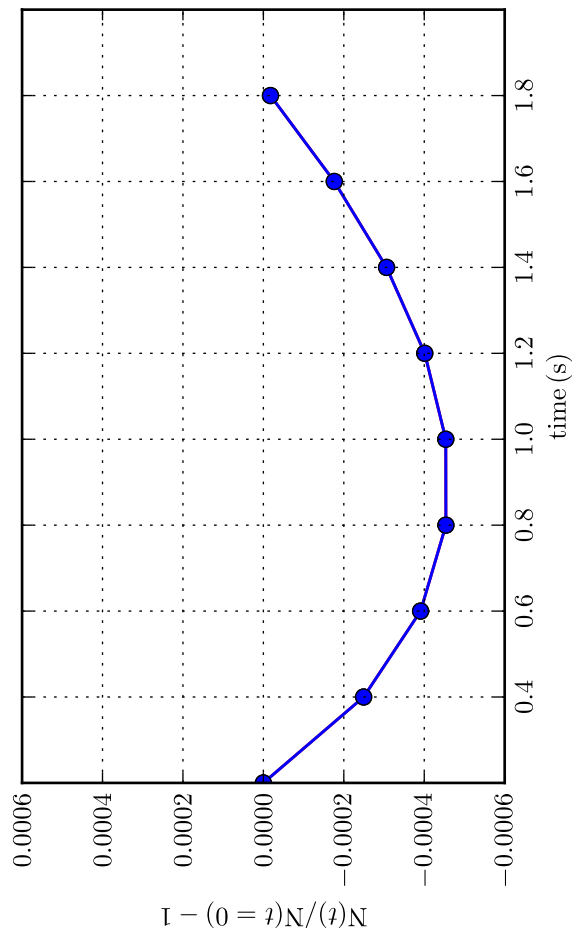
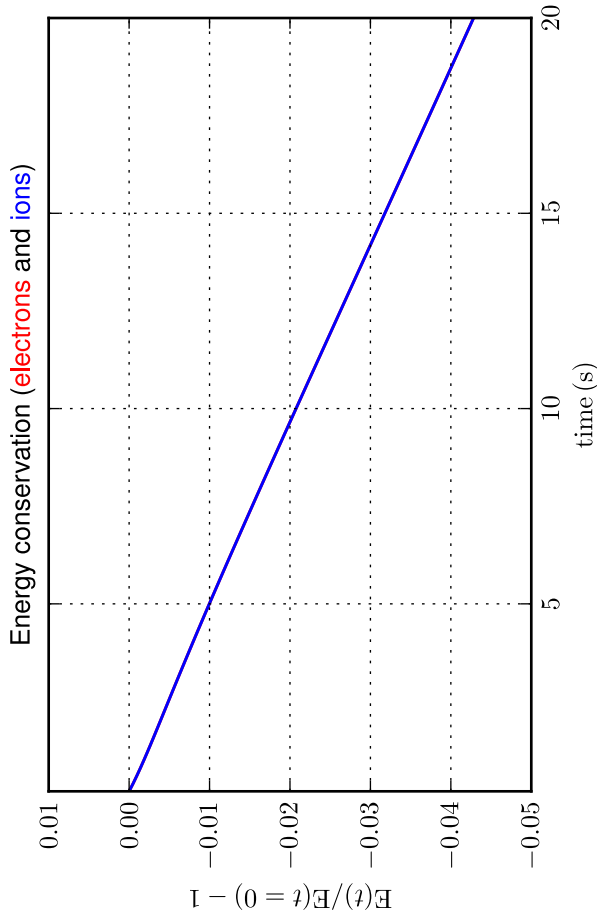
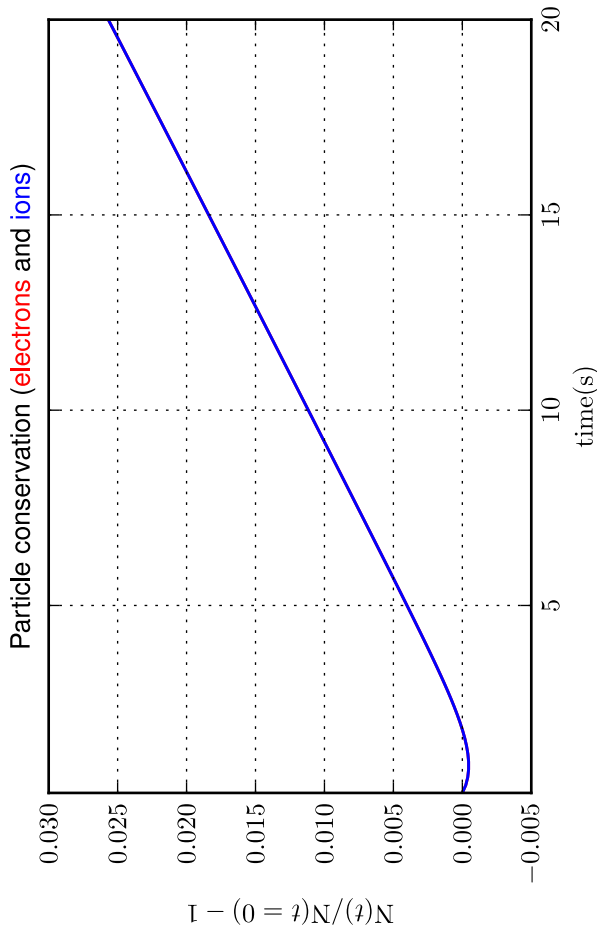


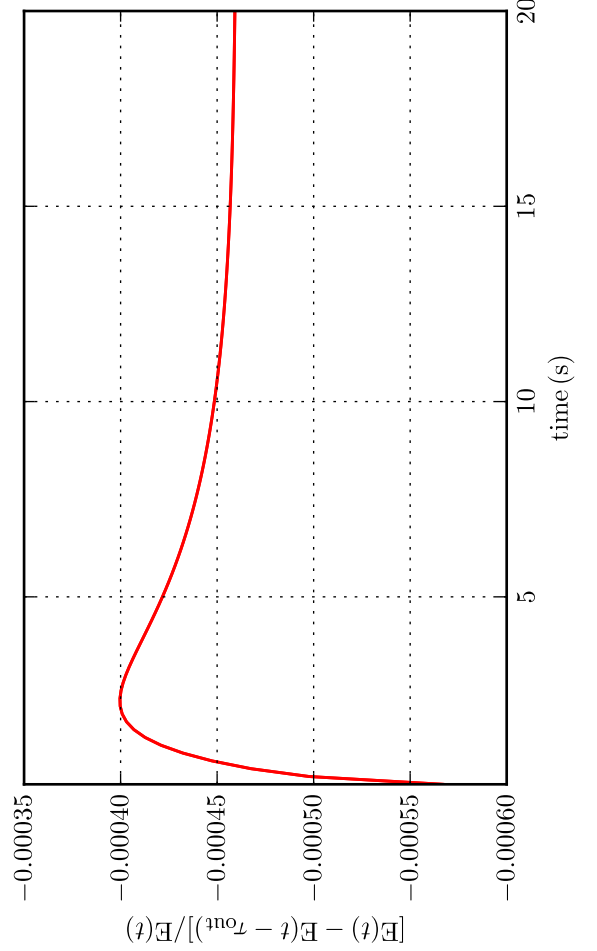
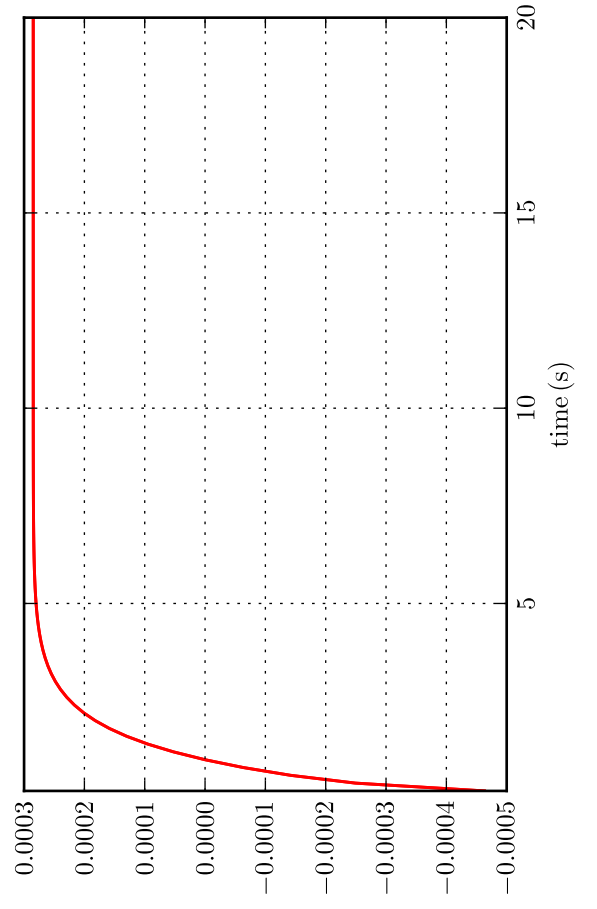
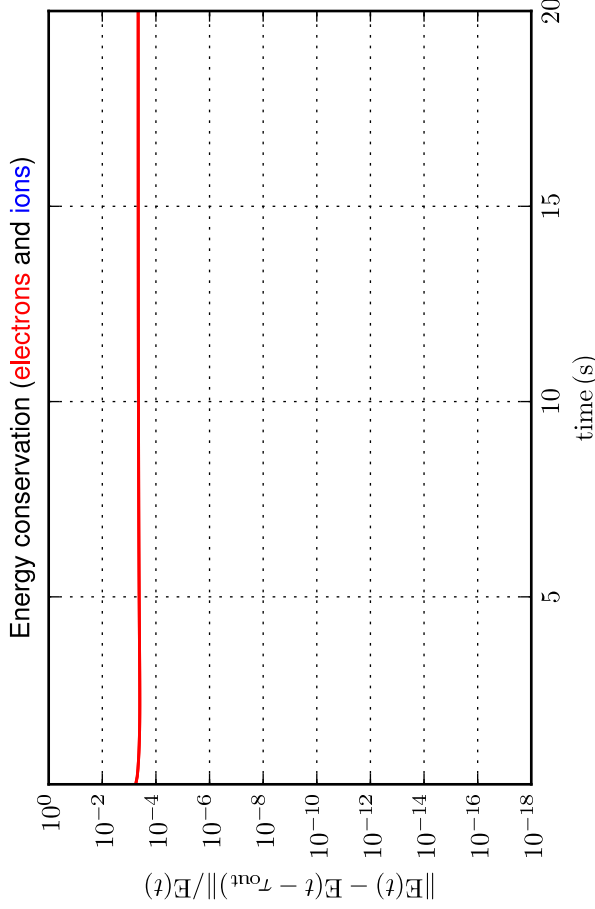
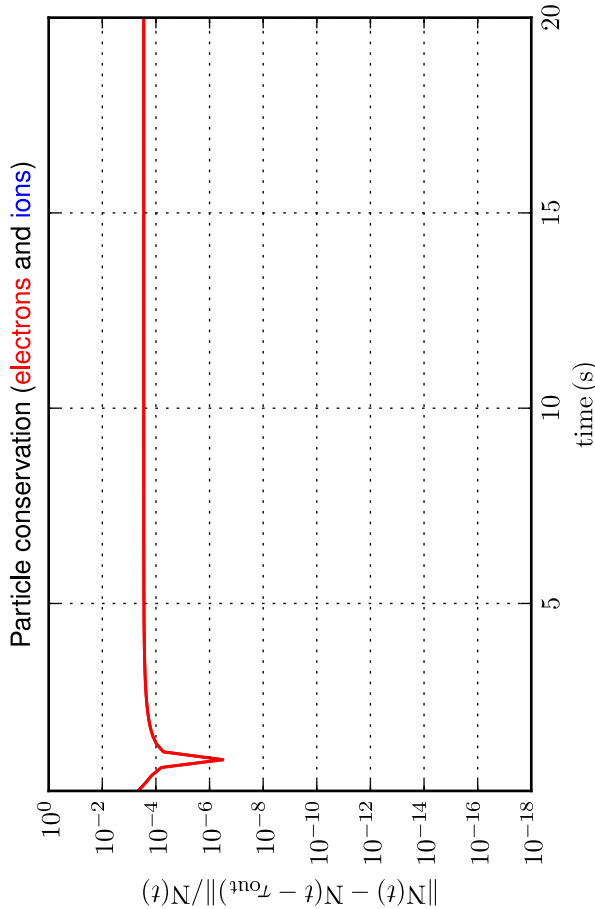
Part. & Energy conservation [Case: 1.1.5.h, Solver: 3,  $D = 0.1 \text{ m}^2/\text{s}$ ,  $v = -0.10 \text{ m/s}$ ,  $\Delta t = 20.00$ ,  $\tau = 1.0 \times 10^{-3} \text{ s}$ ,  $N_p = 101$ ]  
 Comparison with initial solution - log scale; total time and zoom over time



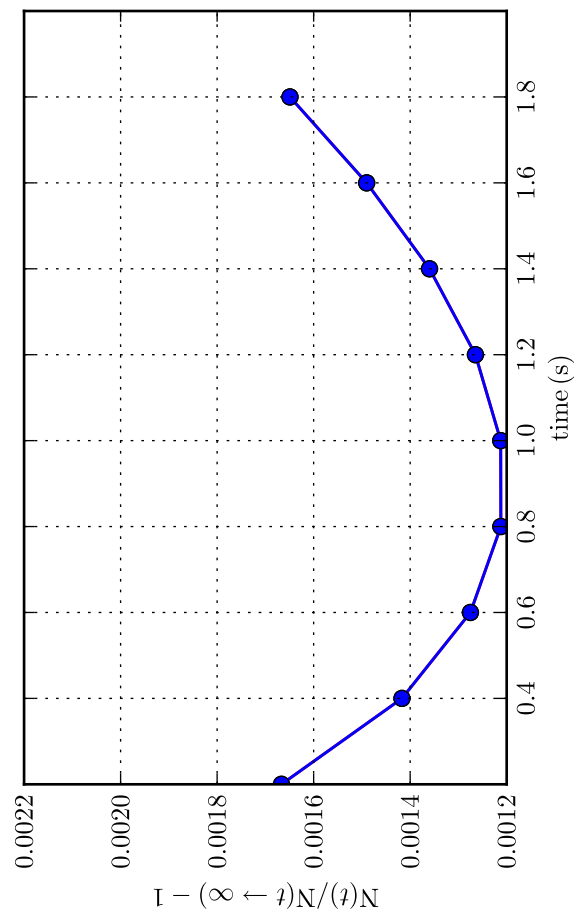
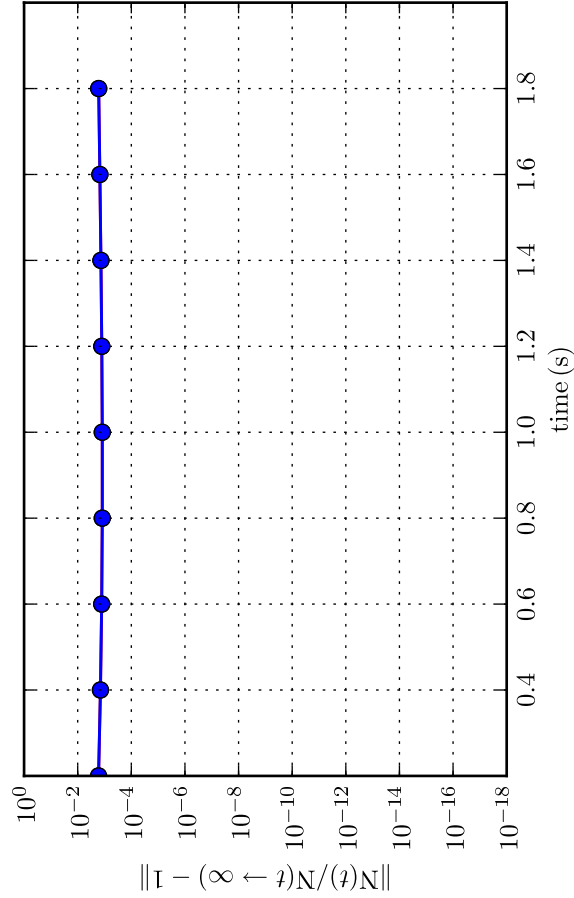
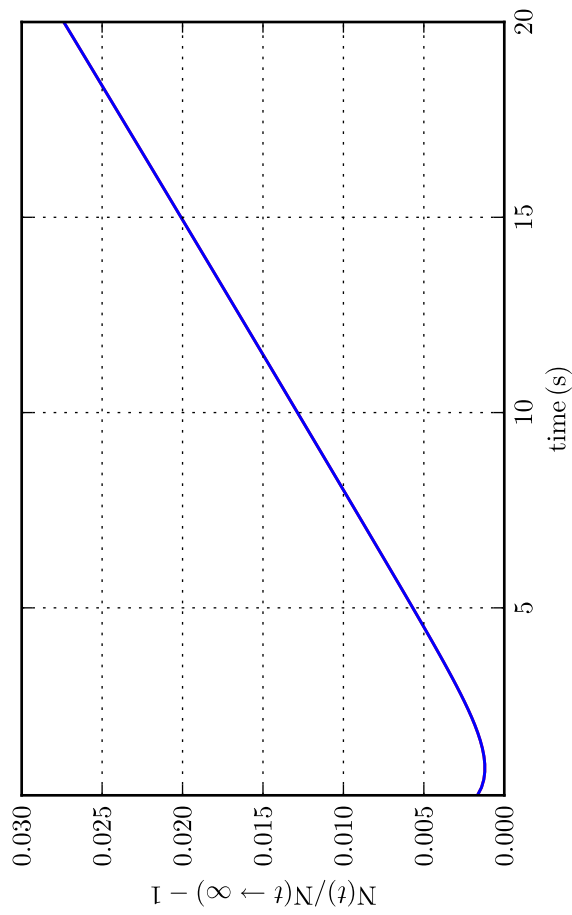
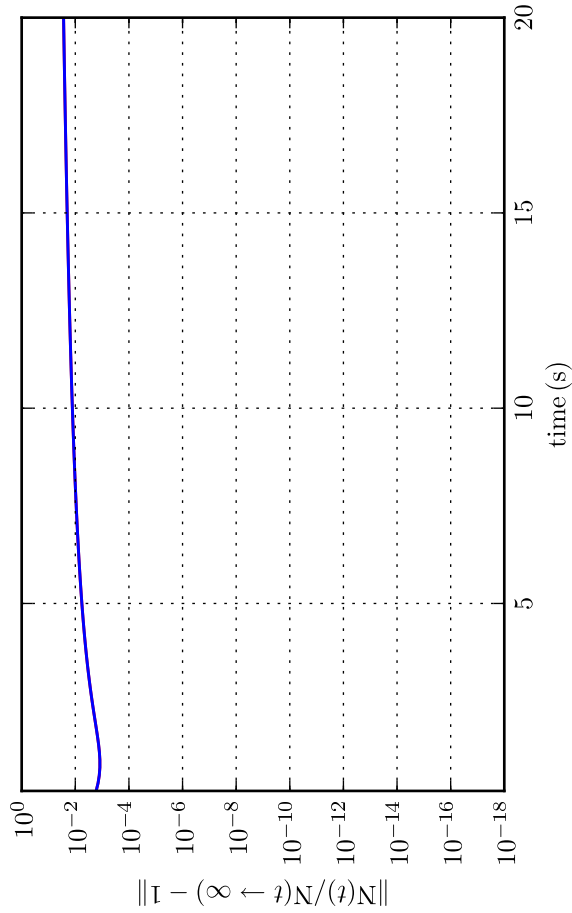
**Part. & Energy conservation [Case: 1.1.5.h, Solver: 3,  $D = 0.1 \text{ m}^2/\text{s}$ ,  $v = -0.10 \text{ m/s}$ ,  $\Delta t = 20.00$ ,  $\tau = 1.0 \times 10^{-3} \text{ s}$ ,  $N_p = 101$ ]**  
**Comparison with initial solution - linear scale; total time and zoom over time**



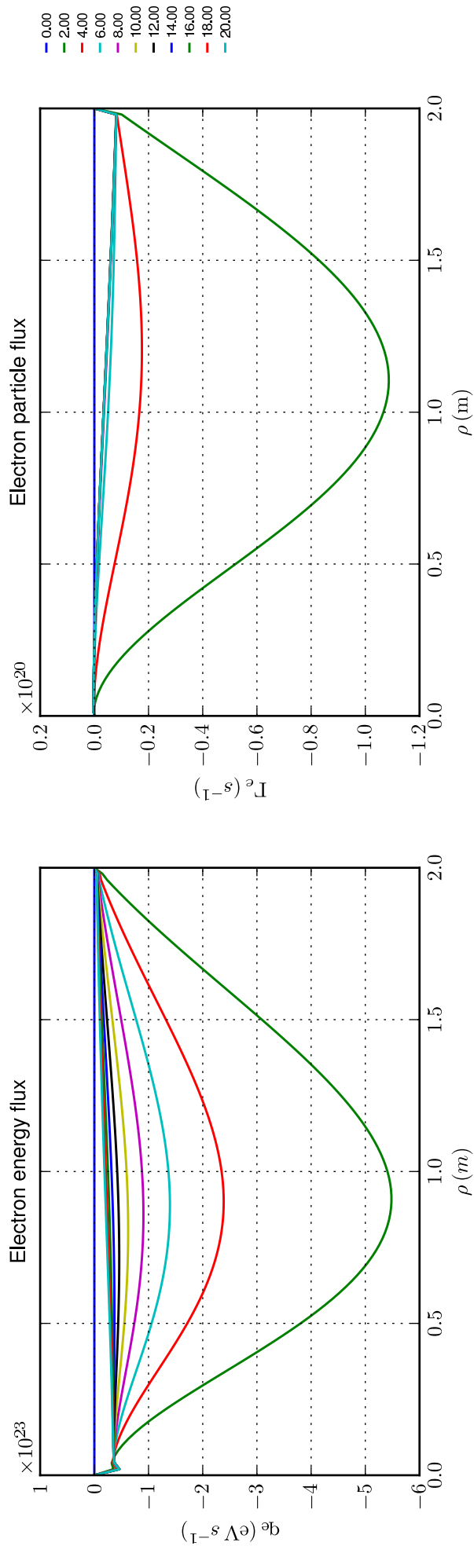
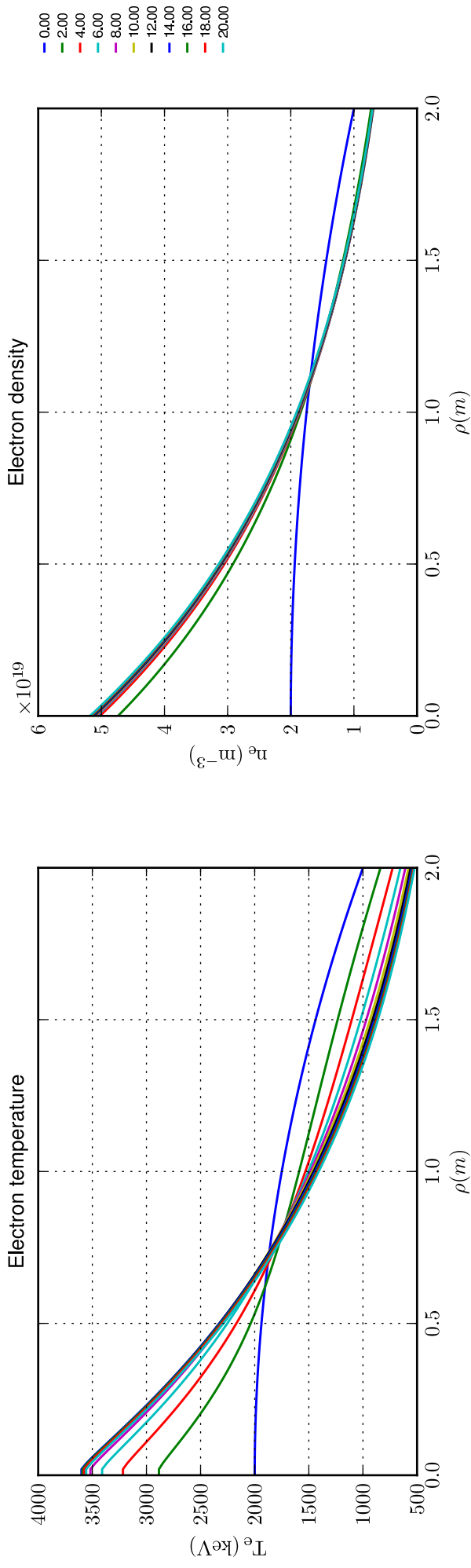
Part. & Energy conservation [Case: 1.1.5.h, Solver: 3,  $D = 0.1 \text{ m}^2/\text{s}$ ,  $v = -0.10 \text{ m/s}$ ,  $\Delta t = 20.00$ ,  $\tau = 1.0 \times 10^{-3} \text{ s}$ ,  $N_p = 101$ ]  
 Comparison with previous time-sampled ( $\tau_{\text{out}}$ ) solution - log and linear scales



Particle conservation [Case: 1.1.5.h, Solver: 3,  $D = 0.1 \text{ m}^2/\text{s}$ ,  $v = -0.10 \text{ m/s}$ ,  $\Delta t = 20.00$ ,  $\tau = 1.0 \times 10^{-3} \text{ s}$ ,  $N_p = 101$ ]  
 Comparison with asymptotic solution (electrons and ions); total time and zoom over time

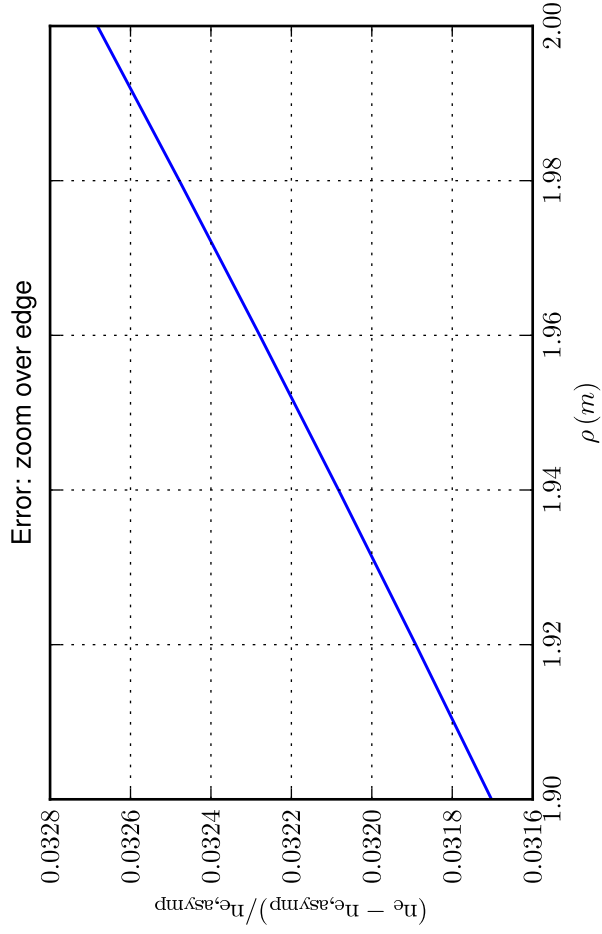
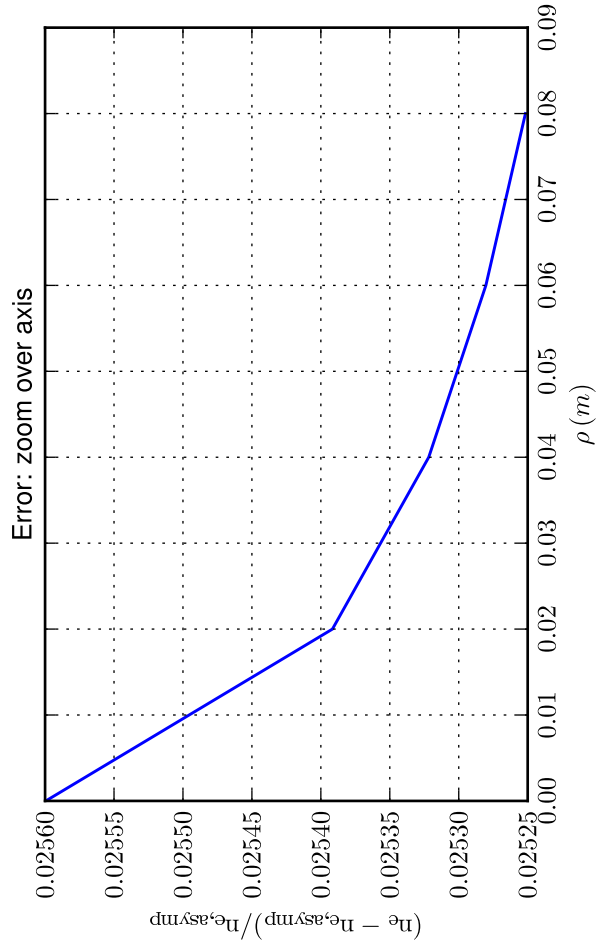
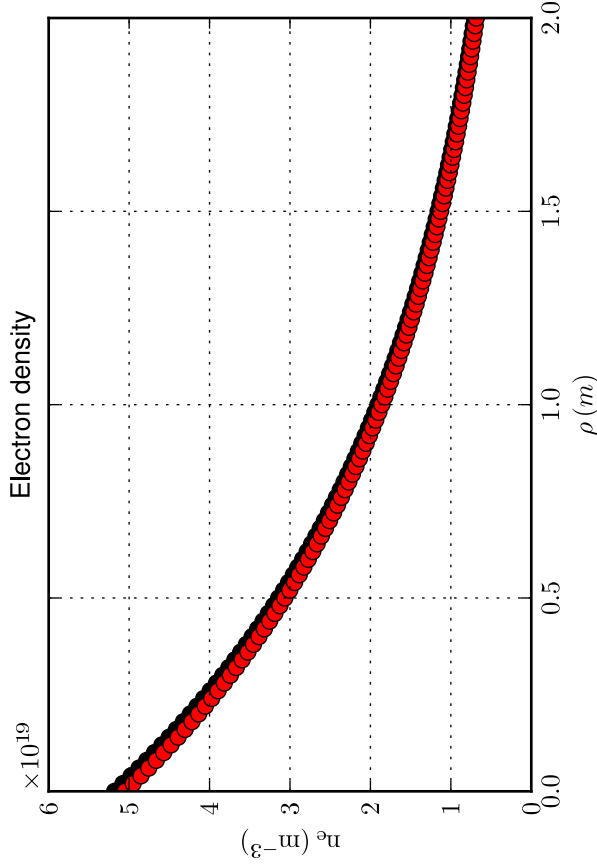
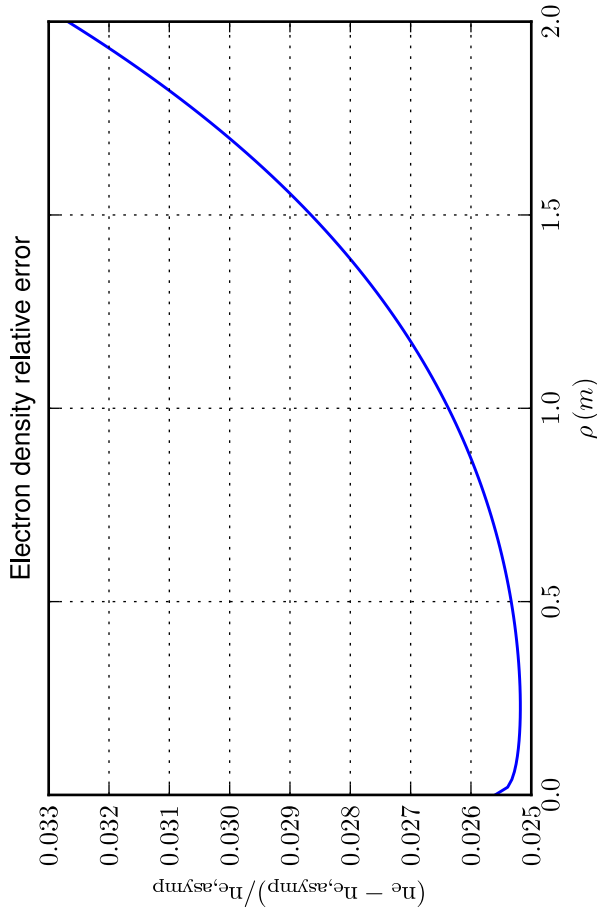


Profiles [Case: 1.1.5.h, Solver: 3,  $D = 0.1 \text{ m}^2/\text{s}$ ,  $v = -0.10 \text{ m/s}$ ,  $\Delta t = 20.00$ ,  $\tau = 1.0 \times 10^{-3} \text{ s}$ ,  $N_p = 101$ ]  
 Time sampling: total simulation time/10



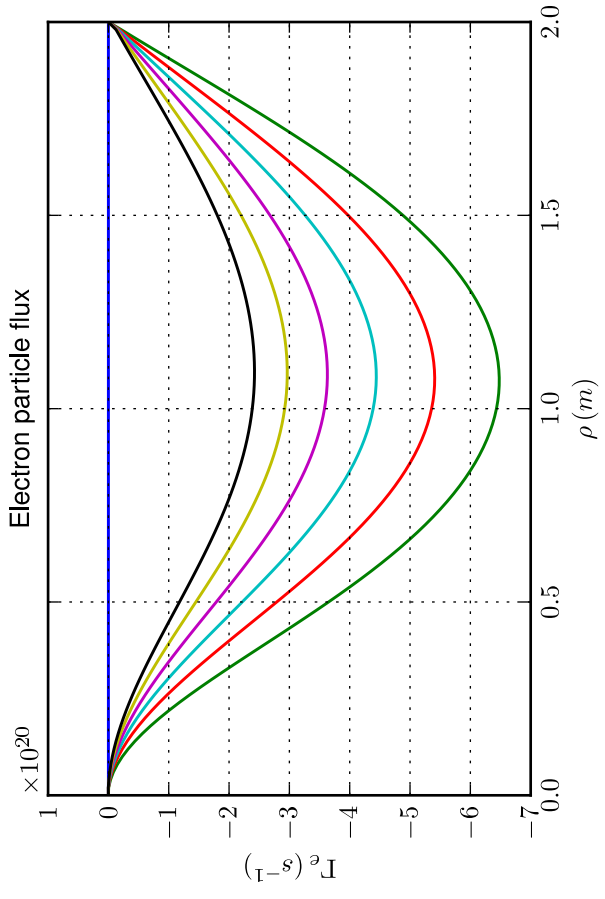
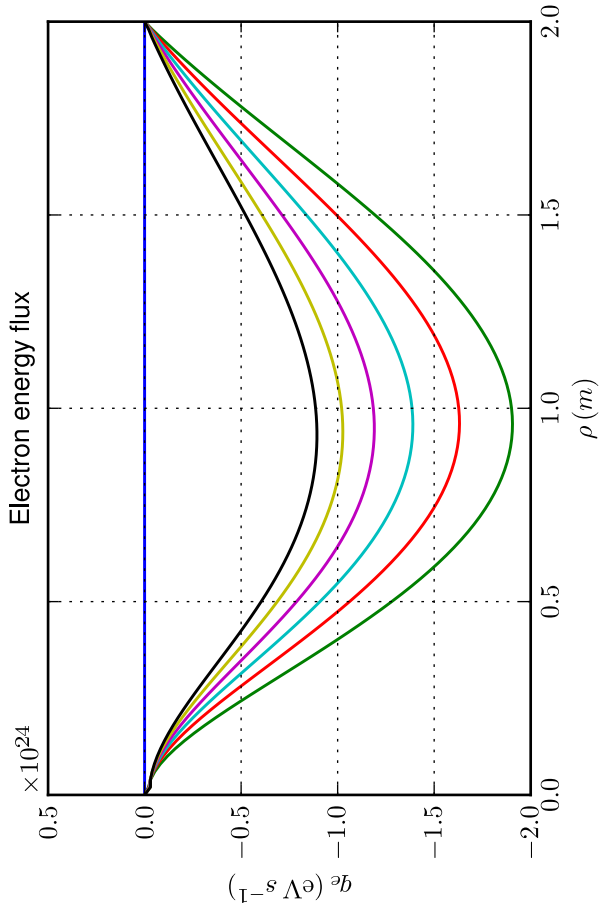
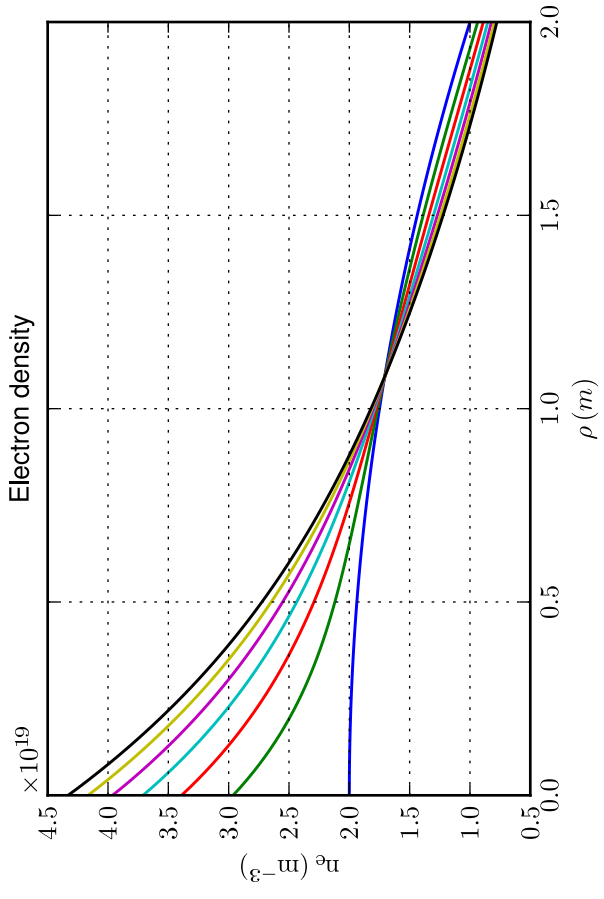
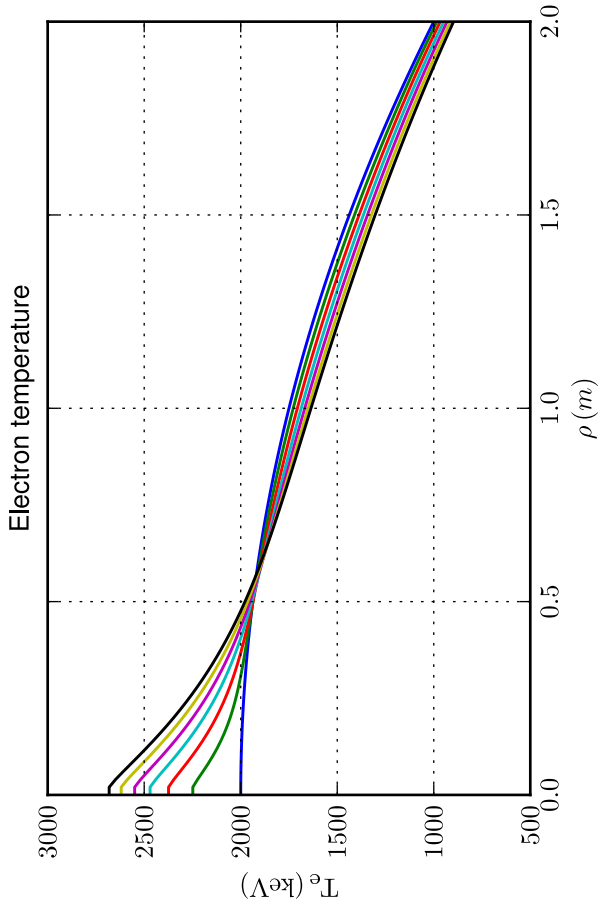
Profiles [Case: 1.1.5.h, Solver: 3,  $D = 0.1 \text{ m}^2/\text{s}$ ,  $v = -0.10 \text{ m/s}$ ,  $\Delta t = 20.00$ ,  $\tau = 1.0 \times 10^{-3} \text{ s}$ ,  $N_\rho = 101$ ]

Comparison with asymptotic solution



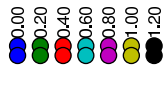
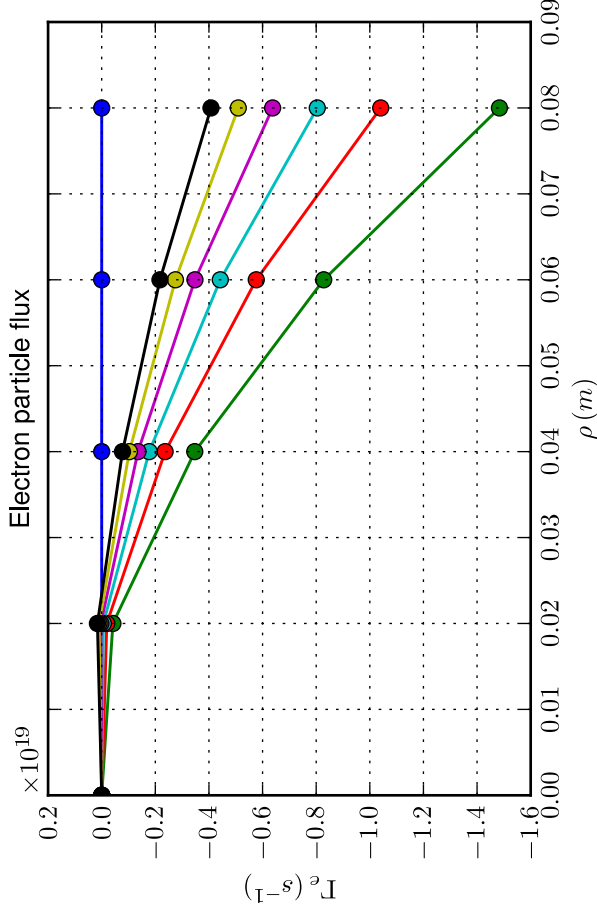
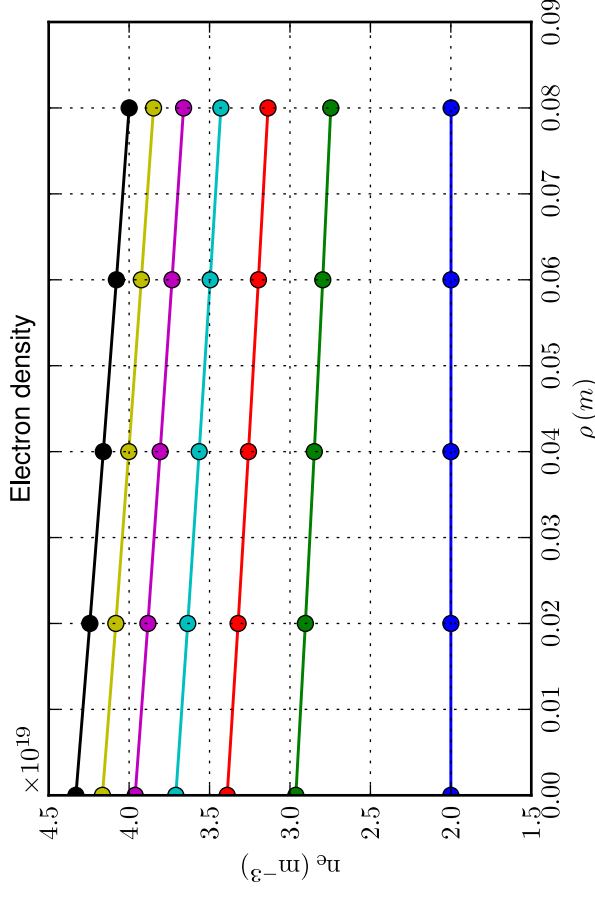
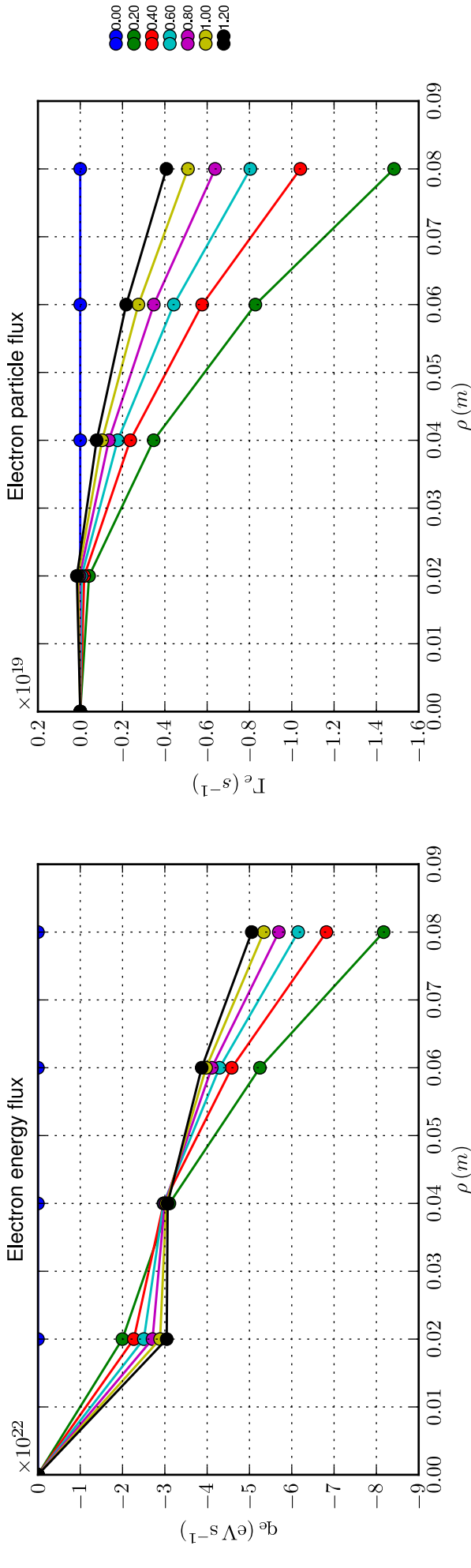
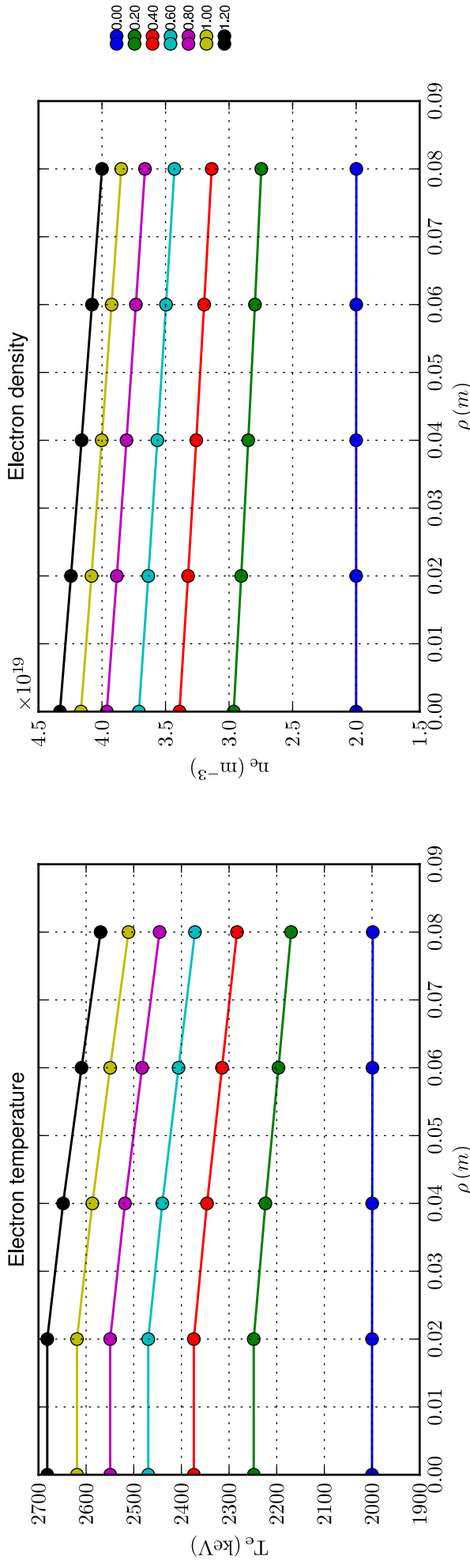
Profiles [Case: 1.1.5.h, Solver: 3,  $D = 0.1 \text{ m}^2/\text{s}$ ,  $v = -0.10 \text{ m/s}$ ,  $\Delta t = 20.00$ ,  $\tau = 1.0 \times 10^{-3} \text{ s}$ ,  $N_\rho = 101$ ]

Time sampling: first 10 time slices or zoom over time  $0.1 \times (a^2/D)/|1 - (Va/D)| = 1.33 \text{ s}$



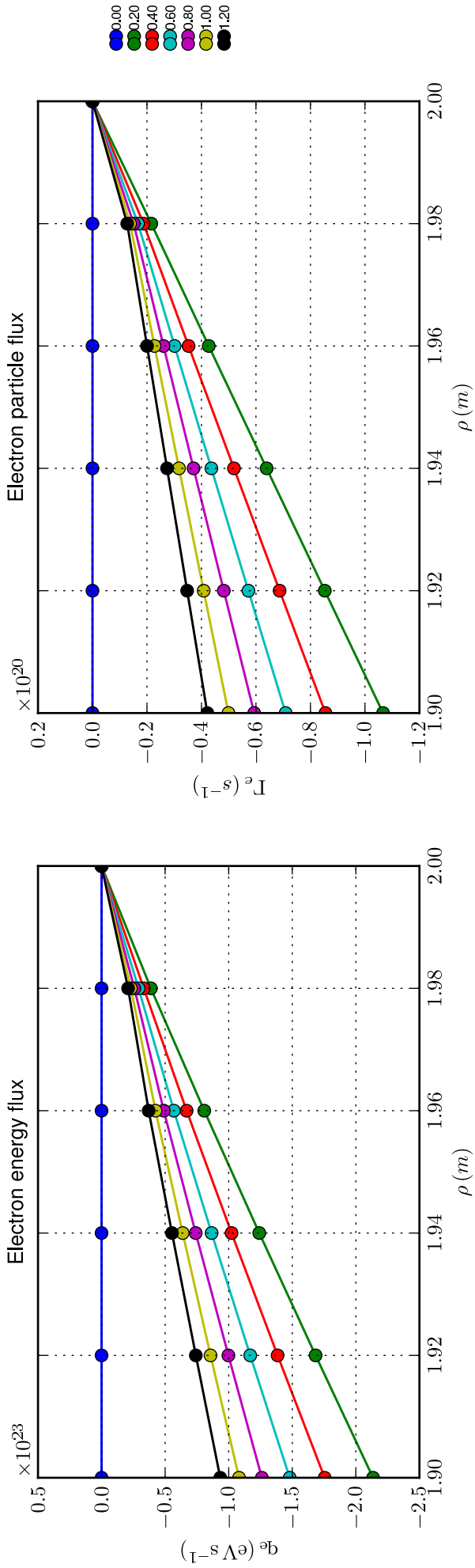
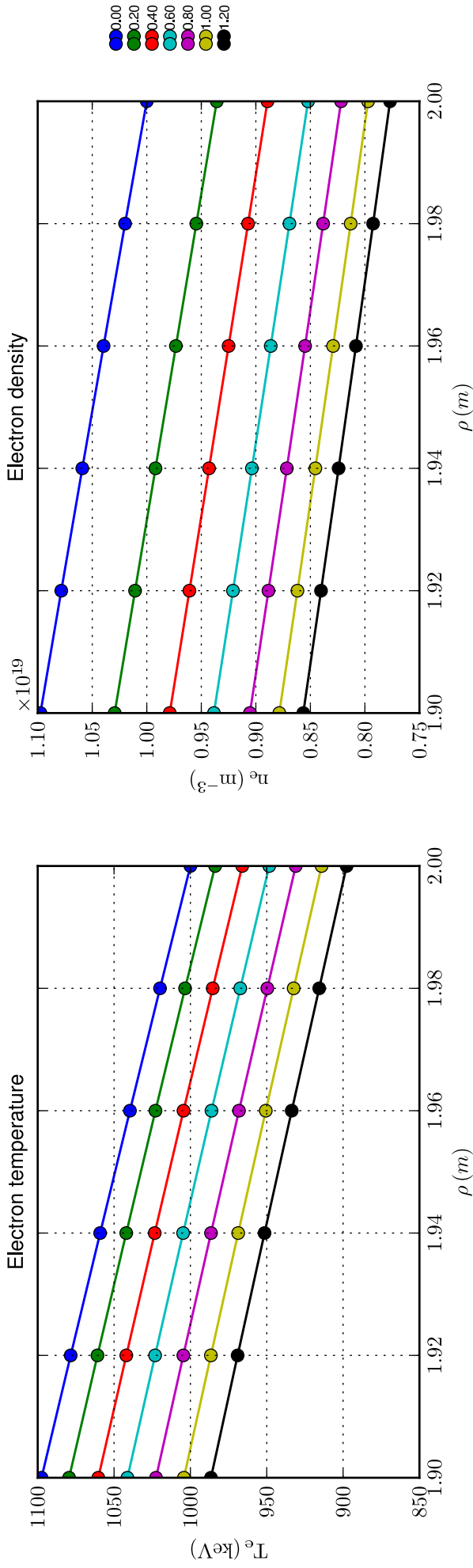
- 0.00
- 0.20
- 0.40
- 0.60
- 0.80
- 1.00
- 1.20

Profiles [Case: 1.1.5.h, Solver: 3,  $D = 0.1 \text{ m}^2/\text{s}$ ,  $v = -0.10 \text{ m/s}$ ,  $\Delta t = 20.00$ ,  $\tau = 1.0 \times 10^{-3} \text{ s}$ ,  $N_\rho = 101$ ]  
 Spatial zoom over magnetic axis; time sampling: first 10 time slices or zoom over time  $0.1 \times (a^2/D)/|1 - (V_a/D)| = 1.33 \text{ s}$

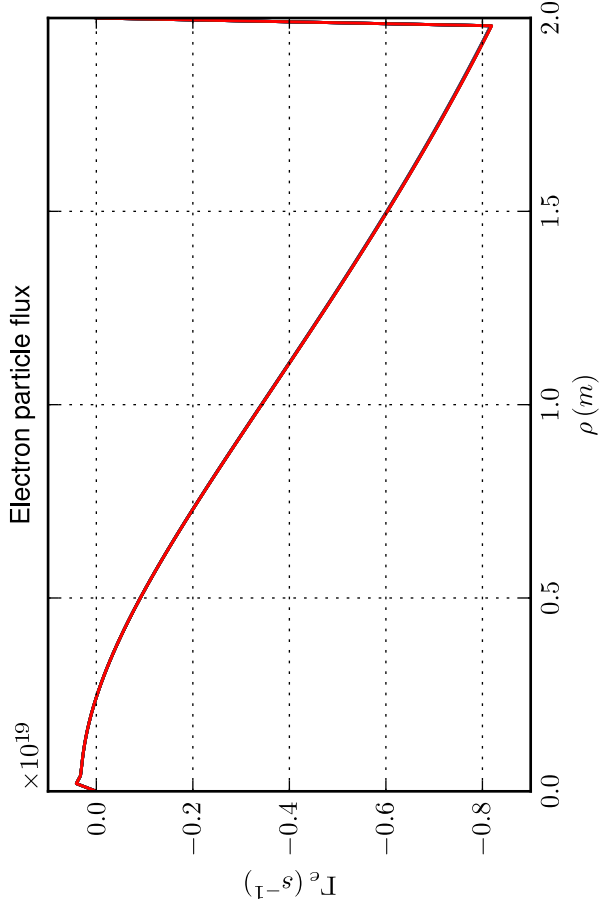
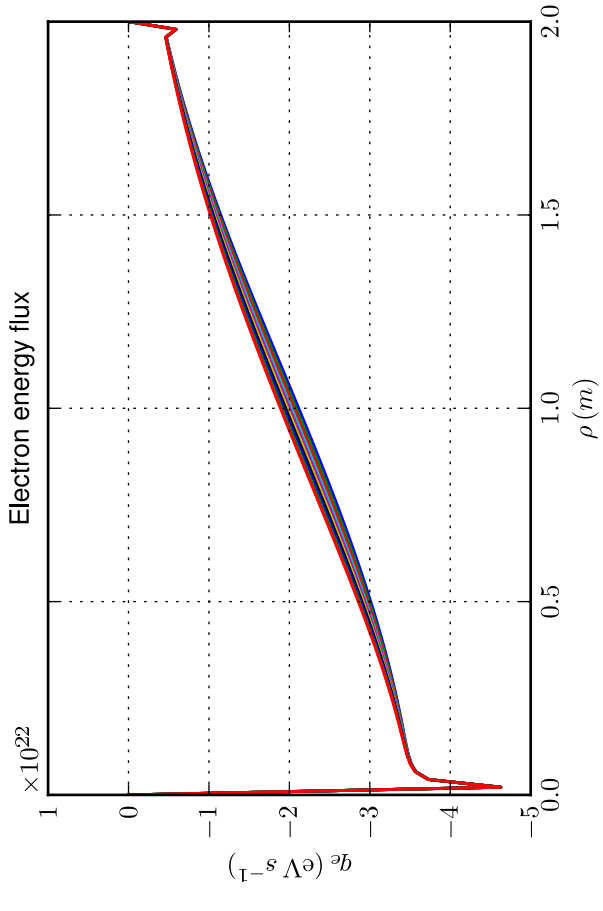
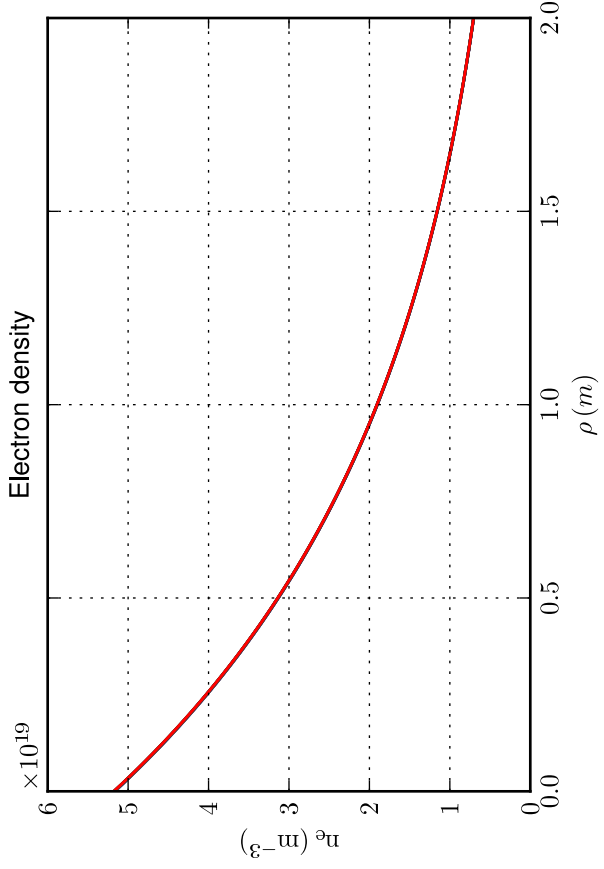
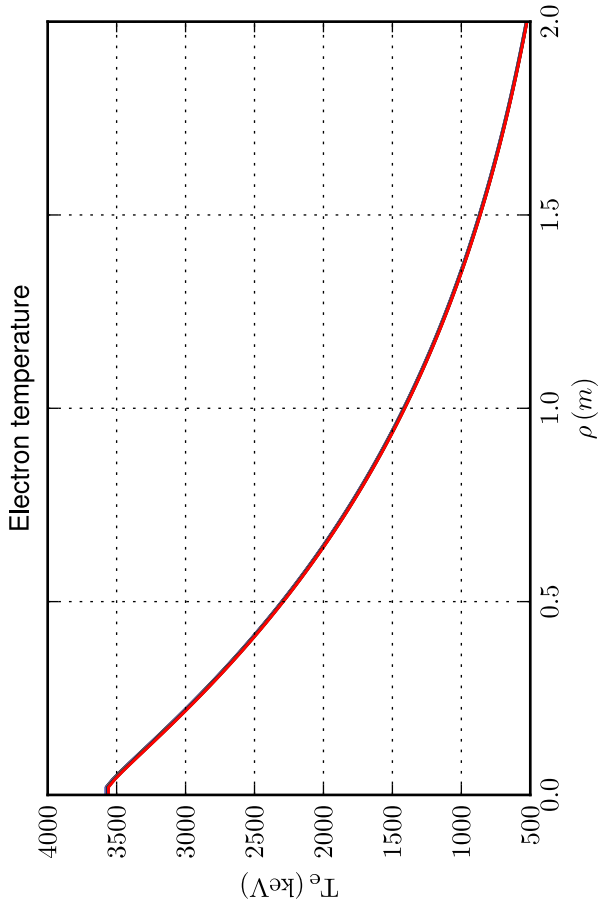




Profiles [Case: 1.1.5.h, Solver: 3,  $D = 0.1 \text{ m}^2/\text{s}$ ,  $v = -0.10 \text{ m/s}$ ,  $\Delta t = 20.00$ ,  $\tau = 1.0 \times 10^{-3} \text{ s}$ ,  $N_\rho = 101$ ]  
 Spatial zoom over edge; time sampling: first 10 time slices or zoom over time  $0.1 \times (a^2/D)/|1 - (Va/D)| = 1.33 \text{ s}$

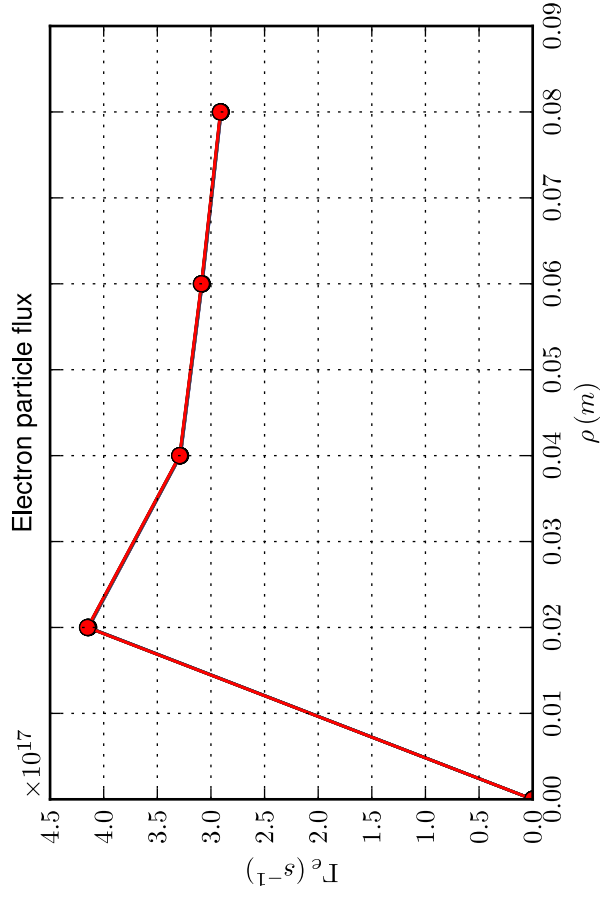
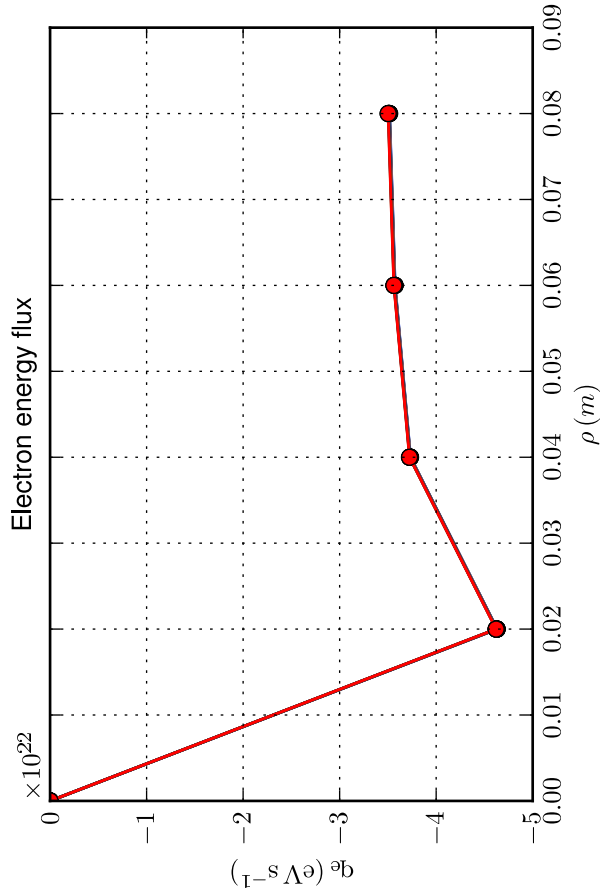
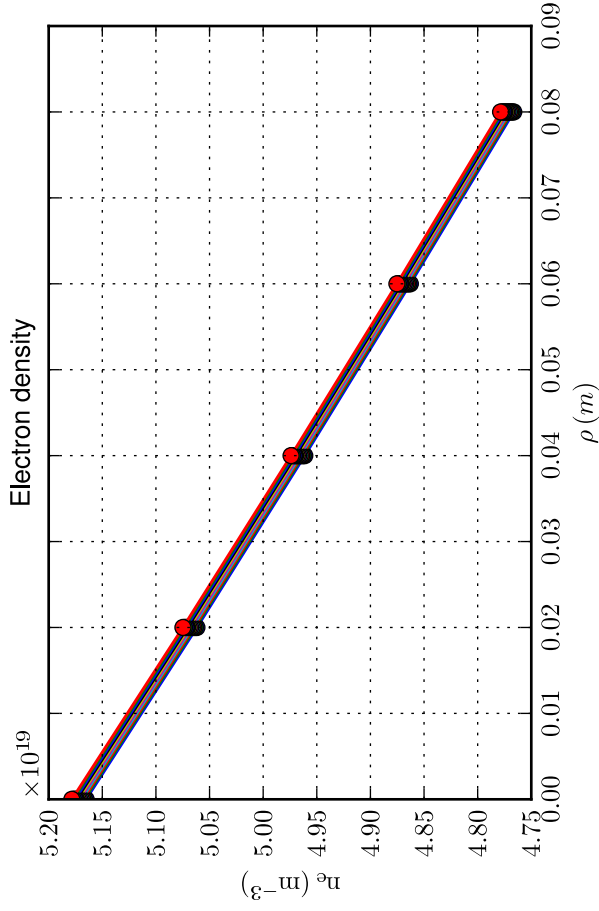
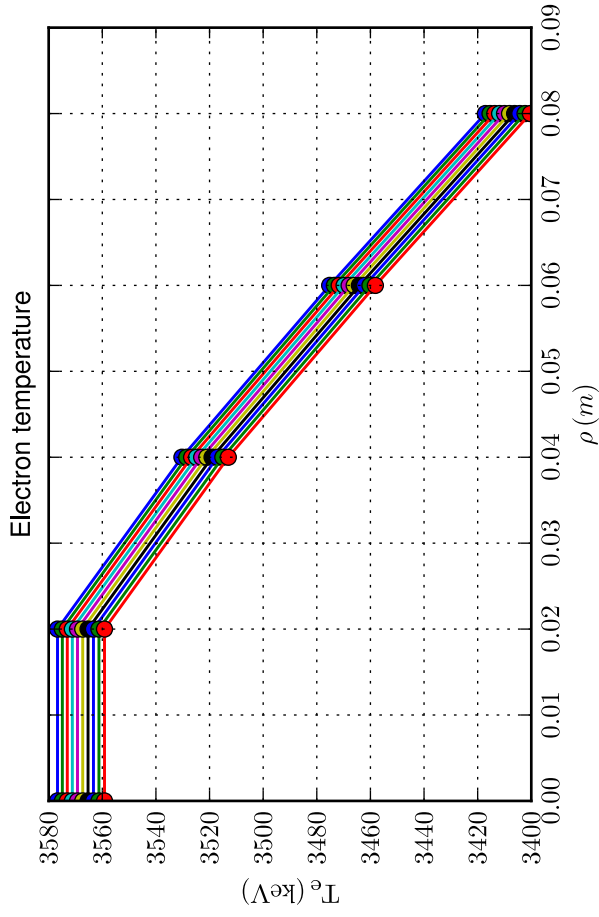


Profiles [Case: 1.1.5.h, Solver: 3,  $D = 0.1 \text{ m}^2/\text{s}$ ,  $v = -0.10 \text{ m/s}$ ,  $\Delta t = 20.00$ ,  $\tau = 1.0 \times 10^{-3} \text{ s}$ ,  $N_p = 101$ ]  
 Time sampling: last 10 time slices



Legend for time slices:  
 18.00 (blue)  
 18.20 (green)  
 18.40 (red)  
 18.60 (cyan)  
 18.80 (magenta)  
 19.00 (yellow)  
 19.20 (black)  
 19.40 (dark blue)  
 19.60 (dark green)  
 19.80 (dark red)

Profiles [Case: 1.1.5.h, Solver: 3,  $D = 0.1 \text{ m}^2/\text{s}$ ,  $v = -0.10 \text{ m/s}$ ,  $\Delta t = 20.00$ ,  $\tau = 1.0 \times 10^{-3} \text{ s}$ ,  $N_p = 101$ ]  
 Spatial zoom over magnetic axis; time sampling: last 10 time slices



Profiles [Case: 1.1.5.h, Solver: 3,  $D = 0.1 \text{ m}^2/\text{s}$ ,  $v = -0.10 \text{ m/s}$ ,  $\Delta t = 20.00$ ,  $\tau = 1.0 \times 10^{-3} \text{ s}$ ,  $N_p = 101$ ]  
 Spatial zoom over edge; time sampling: last 10 time slices

