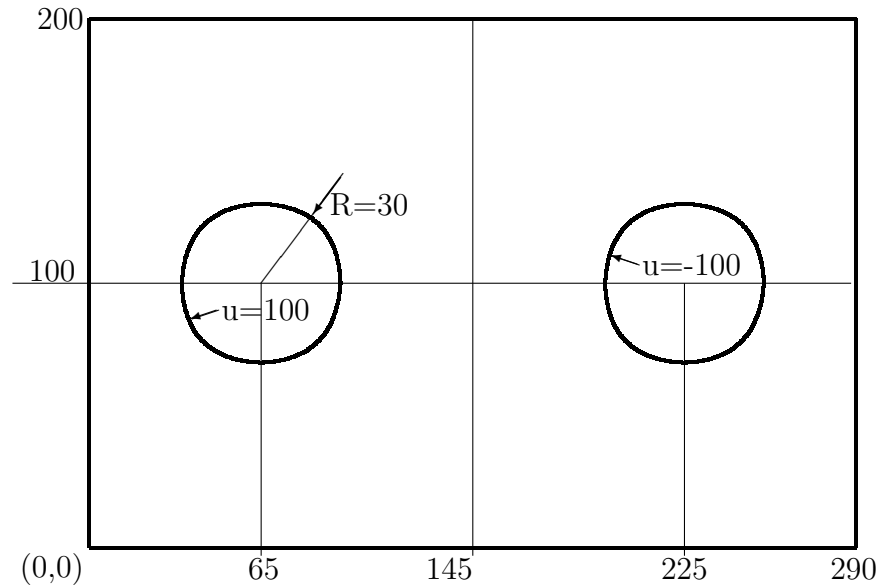


PA05 “CHAMBER”: Electric field

Investigate the electric potential in a vacuum chamber. Consider two cases, (i) isolation of the chamber, and (ii) vanishing electric potential on the outer boundary of the chamber.



Tasks:

- Derive the mathematical model. If possible use symmetries or reduction in the dimension
- Give the variational formulation
- Analysis: discuss existence and uniqueness of solutions
- Discretize the domain Ω
- Numerical analysis: provide an error estimate
- Choose a solver for the system of equations you obtain
- Implementation
- Visualize the results and (if possible) compare them to analytical solutions

- 1 Mathematical model
- 2 Variational formulation
- 3 Analysis
- 4 Discretization
- 5 Solver
- 6 Numerical analysis
- 7 Implementation
- 8 Numerical results