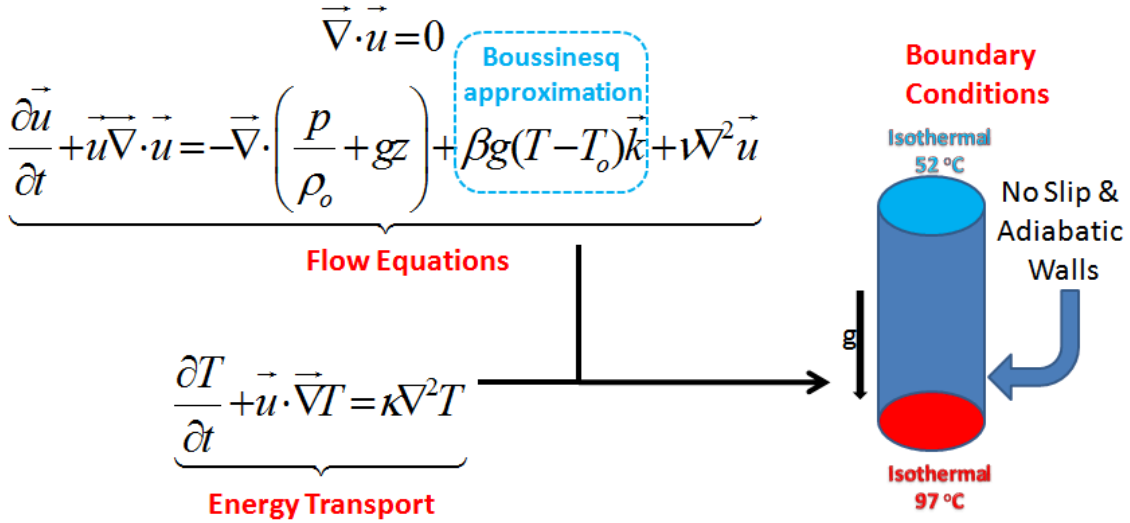
Application of computational fluid dynamics in determining the internal convective flow patterns in Rayleigh Bénard convective cells

Aim: To simulate and analyze the steady state convective flow field of water within a Rayleigh Bénard cylindrical cell of a given geometry and thermal boundary conditions.



Asp	Ra	Height (m)	Diameter (m)
4	2.50E+05	0.0009635	0.00024088
4	2000000	0.00192701	0.00048175
4	9000000	0.00318142	0.00079536

1. Determine the steady state flow field and temperature profiles for each of the 3 geometries assigned to you.
2. Verify that the velocity profiles maps correctly on the Rayleigh number- aspect ratio parametric space.