

Reality

Difficult shapes
Difficult stress fields
Non linear materials
Tangential forces from friction
Impossible to solve

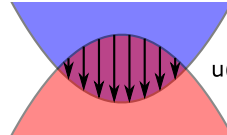
Simplifying Assumptions:

Shapes simplified by Taylor series expansion (Both shapes represented by parabolas)
Surfaces are treated as half spaces
There is no friction
Materials are purely elastic

The problem Hertz solved:

What normal pressure distribution can be applied to two half spaces so the total deflection in the normal direction is equal to the interference between two parabolas:

Parabola for first surface



$u(x,y)$: total deflection

Parabola for second surface

