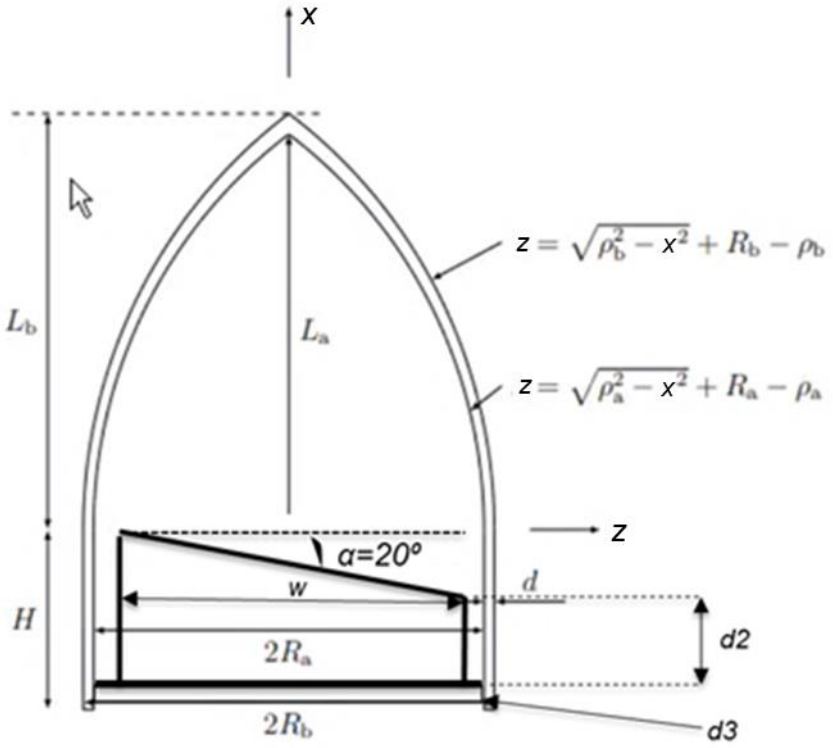
**Test Case 1: Benchmark example EDA RCS for ogive radome with flat plate antenna**

## Geometry




$f$ = 5, 10 GHz and 15 GHz

$w$ = 0.24 m

$d$ = 0.03 / 2sqrt($\varepsilon_r$)

$\varepsilon_r$ = 3

$R_a$ = 0.165 m

$R_b$ = 0.15+d+0.015 m ≈ 0.173660254037844 m

a = 2 (ogive factor)

$L_a$ = a $R_a$ = 0.330 m

$L_b$ = a $R_b$ ≈ 0. 347320508075689 m

$\rho_a$ = ($R_a$^2+ $L_a$^2)/(2 $R_a$) = 0. 4125 m

$\rho_b$ = ($R_b$^2+ $L_b$^2)/(2 $R_b$) ≈ 0.434150635094611 m

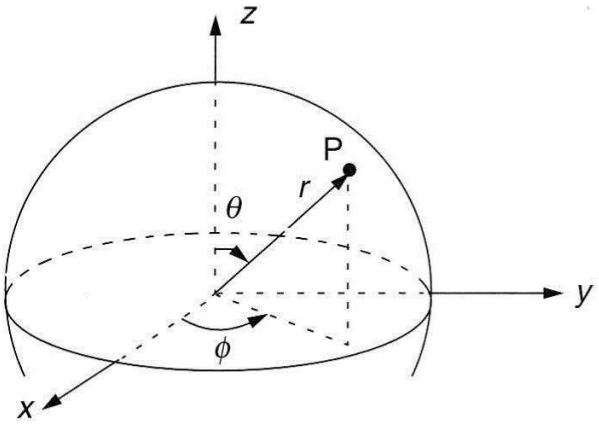
$d2$ = 0.05 m

$d3$ = 0.005 m thickness of the metallic base plate

$H$ = 0.15 m

The radome is dielectric with $\varepsilon_r$ = 3, the antenna is PEC.

# Computations




**Compute RCS for the two polarizations θθ-pol and ϕϕ-pol in two planes**.

(xz-plane $\phi$=0$^o$) 0≤ θ$^o$≤180$^o$ , Δθ = 1$^o$

(xy-plane θ=90$^o$) 0≤ ϕ$^o$≤90$^o$ , Δϕ = 1$^o$

**Methods to be used:**

Fullwave solvers by choice (example MoM, MLFMM, FDTD, FEM)

GO-PO

**Purpose**

Mission is to evaluate how well GO-PO can be used for this kind of problems.

**Comments:**

At 5 and 15 GHz near maximum reflection coefficient occurs for the radome and at 10 GHz minimum reflection occurs.

CAD-model at .STEP-format can be provided by FOI on demand

Note that the radome thickness is larger than d at the cone tip.

**Data format and filename:**

.txt file (asci) name the file organization_name_x_scan_pol.txt. x = theta, phi. pol = theta_theta, phi_phi

data = data(angle, f) where data(1,1) corresponds to theta= 0 or phi = 0, f = 5 GHz.

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