Ball Positioning

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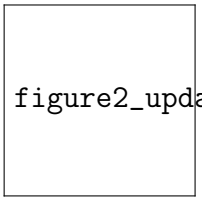
1 Firures



2 Variables

- Angles α, β, γ: as illustrated (the value of α is known)
- H: the height of the screen
- h: the height of the ball in the screen
- Δh: the offset of the ball in vertical direction in the screen (from the middle of the ball to the middle of the screen)
- R: the real radius of the ball
- d: the real horizontal distance from the ball to the camera

3 Equations

1. $\frac{tan(\gamma+\beta)}{tan\alpha} = \frac{\Delta h}{\frac{1}{2}H}$

2. $\frac{tan(\gamma+2\beta)}{tan\alpha} = \frac{\Delta h+\frac{1}{2}h}{\frac{1}{2}H}$

3. $\frac{R}{sin\beta} = \frac{d}{cos(\gamma+\beta)}$