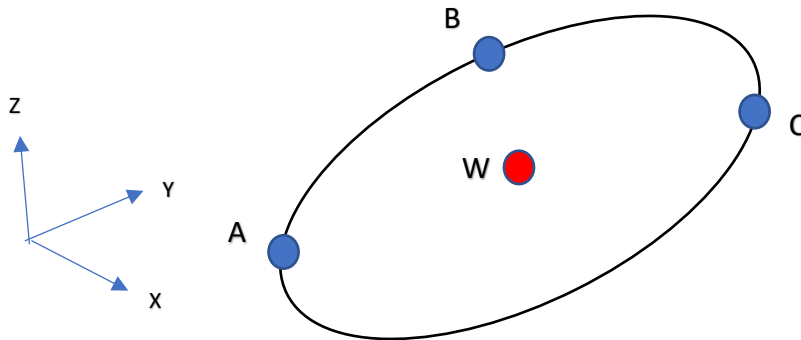


3D Circle Centre



For any circle, defined by 3 points:

$$A = (Ax, Ay, Az),$$

$$B = (Bx, By, Bz) \text{ \&}$$

$$C = (Cx, Cy, Cz)$$

Let,

$$D = Cx - Ax$$

$$E = Cy - Ay$$

$$F = Cz - Az$$

$$G = Bx - Ax$$

$$H = By - Ay$$

$$J = Bz - Az$$

$$K = Ax^2 - Cx^2 + Ay^2 - Cy^2 + Az^2 - Cz^2$$

$$L = Ax^2 - Bx^2 + Ay^2 - By^2 + Az^2 - Bz^2$$

Then,

$$M = E*J - F*H$$

$$N = D*J - F*G$$

$$P = D*H - E*G$$

$$Q = - (J - F*G/D) / (H - E*G/D)$$

$$R = - (K - G/D*L) / (2*(H - E*G/D))$$

$$S = - (Q*E + F) / D$$

$$T = - (2*R*E*L) / (2*D)$$

Circle Centre , $W = (Wx, Wy, Wz)$ is given by:

$$Wz = - ((T - Ax)*(M - (R - Ay)*N - Az*P) / (S*M - Q*N + P))$$

$$Wx = S*Wz + T$$

$$Wy = Q*Wz + R$$

$$\text{Radius} = \sqrt{((Wx - Ax)^2 + (Wy - Ay)^2 + (Wz - Az)^2)}$$