respectively. Then, in terms of dual coordinates x^* on $\mathbb{P}^{5*}$, the Gauss maps of G and F are given by

$$x^* = Qx \quad \text{and} \quad x^* = Q'x;$$

the dual hypersurfaces G^* and $F^* \subset \mathbb{P}^5$ of tangent hyperplanes to G and F are thus

$$G^* = ((x^*, Q^{-1}x^*) = 0)$$

and

$$F^* = ((x^*, Q'^{-1}x^*) = 0.)$$

Pf

$$\begin{array}{ccc} G & \longrightarrow & \mathbb{P}^{5*} \\ \Psi & & \Psi \\ x & \longmapsto & T_x G. \end{array}$$

$${}^t x Q x = 0 = x_i q_{ij} x_j$$

$$\Rightarrow \quad \frac{\partial\, {}^t x Q x}{\partial x_i} = q_{ij} x_j$$

$$\Rightarrow \quad T_x G = (Qx, z) = 0 \quad \Rightarrow \quad Qx = x^* \in \mathbb{P}^{5*}$$

Recall that, given a hyperplane $H = (a_0 X_0 + \cdots + a_n X_n = 0)$, it corresponds to the element $[a_0, \ldots a_n] \in \mathbb{P}^{n*}$.

$$\Rightarrow (Qx, x) = (x^*, Q^{-1}x^*) = 0 \Rightarrow G^* = ((x^*, Q^{-1}x^*) = 0)$$

Similarly, we get $F^* = ((x^*, Q'^{-1}x^*) = 0)$

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We see from this that for $x \in F$, $T_x(F)$ will be tangent to G if and only if

$$\mathcal{G}_F(x) \in G^*,$$