may be naturally identified with the abstract curve B of irreducible families of 2-planes in the quadrics of the pencil $\{F_\lambda\}$.

To be explict, suppose that our original pair of quadrics G and F are given as the locus of two symmetric quadric forms Q and Q'. We can, of course, take Q to be given by the identity matrix, and by standard linear algebra we may at the same time diagonalize Q'; i.e., we may take

$$G = (\sum X_i^2 = 0) \quad \text{and} \quad F = (\sum \lambda_i X_i^2 = 0).$$

~~$\ulcorner$ Q symmetric matrix, nonsingular.~~
~~Consider $\{X \in \mathbb{C}^n \mid (Q - \lambda_1 I) X = 0\} = A$ λ_1 is nonzero eigenvalue of Q. If we let $B = \{X \in \mathbb{C}^n \mid {}^tXX \neq 0\}$, then $A \cap B \neq \phi$, otherwise~~
~~$A \subset B^c = \{{}^tXX = 0\} \Rightarrow$ Since A is a hyperplain in $\mathbb{C}^n$, we may assume $A = (X_1 = 0)$.~~
~~$\Rightarrow$ $B^c = \{X_1 f(X_1, \cdots X_n) = 0\}$ which is impossible since B^c is smooth.~~
~~Thus we have $v_1 \in \mathbb{C}^n$ s.t ${}^tv_1 v_1 \neq 0$ and $(Q - \lambda I) v_1 = 0$ ($\Leftrightarrow$ $Q v_1 = \lambda v_1$). Let $v_1^\perp = \{X \in \mathbb{C}^n \mid {}^tv_1 X = 0\}$ $\Rightarrow$ $QX \in v_1^\perp$ if $X \in v_1^\perp$ since ${}^tv_1 QX = {}^t(Qv_1) X = {}^t(\lambda v_1) X = \lambda {}^tv_1 X = 0.$ $\Rightarrow$ Again apply the argument above to $v_1^\perp$. $\Rightarrow$ We find $v_2 \in v_1^\perp$ s.t ${}^tv_2 v_2 \neq 0$, and~~