

$$(i) L_1 \cap L_0 = \emptyset$$

$$\Rightarrow B_{L_0} \neq L_1 \text{ \& } B_{L_1} \neq L_0$$

$$(ii) L_0 \cap L_1 \neq \emptyset$$

$$\Rightarrow \text{Choose } T_x X = V_3, x \in L_0 \cap L_1$$

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$\Gamma$   ~~$L_1 \cap L_0 = \{x\} \Rightarrow$  Consider  $T_x(X) \Rightarrow T_x(X) \cap X$  is a set of four lines by P264. Let  $V = T_x(X) \Rightarrow T_x(X) \cap X = V \cap X = L_0 \cup L_1 \cup M_1 \cup M_2 \Rightarrow$  Since  $L_0 = 0$ , and by P188,  $L_0 \cup L_1 \cup M_1 \cup M_2 = 0$ ,  $L_1 = -(M_1 \cup M_2) = -M_1 - M_2$ .~~

Consider  $B_{L_1}$  &  $B_{L_0} \Rightarrow$  By P181,  $B_{L_1} \cdot B_{L_0} = 2 \Rightarrow B_{L_1} \cap B_{L_0} = \{M_1, M_2\}$

$\Rightarrow M_1 \cap L_1 \neq \emptyset \text{ \& } M_2 \cap L_1 \neq \emptyset \Rightarrow V_3 \cap X = \{L_0, L_1, M_1, M_2\}, V_3 = \overline{L_0, L_1}$

The second step is to translate the points  $M_1, M_2 \in A$  by  $L_2$ ; this is done by identifying the curves  $B_{L_0}$  and  $B_{L_2}$  via the abstract curve  $B$ , as follows: each of the lines  $M_1$  and  $M_2$  determines, together with  $L_0$ , a unique quadric  $F_{\lambda_i}$  in the pencil spanned by  $F$  and  $G$ , and an irreducible family of  $\alpha$ -planes in  $F_{\lambda_i}$ .

$\Gamma$  By P188,  $\overline{L_0, M_1}$  &  $\overline{L_0, M_2}$  are contained in quadrics  $F_{\lambda_0}$  and  $F_{\lambda_1}$  respectively. By P135 & P188 ~ P189,  $\overline{L_0, M_i}$  is contained in an irreducible 3-dimensional family of  $\alpha$ -planes in  $F_{\lambda_i}$ . Recall that in case  $F_{\lambda_i}$  smooth,  $\exists$  two disjoint families.  $\Rightarrow$

In that family of  $\alpha$ -planes, moreover, there will be a unique element  $\Lambda_i$  containing  $L_2$ ; if we let  $M_i'$  be the remaining line of intersection of  $\Lambda_i$  with  $X$ , then as we have seen,

$$M_i' = M_i - L_2.$$

$\Gamma$  For example,  $\overline{L_0, M_1} \subset F_{\lambda_1} \Rightarrow$  Let  $A$  be the