

$$\Rightarrow f_L : \bigcup_{L' \in B_L - L} L' \longrightarrow \mathbb{P}^3$$

$$\begin{array}{ccc} \downarrow \psi & & \downarrow \iota \\ L' & \longmapsto & f_L(L') \end{array}$$

$$\Rightarrow B_L - L \longleftrightarrow E_L \text{ is isomorphic}$$

$$\downarrow \psi \quad \downarrow \iota$$

$$L' \longleftrightarrow f_L(L')$$

$V_2 \cap E_L \ni y = f_L(L') \Rightarrow L' \cap L \neq \emptyset$ and by the note P993, since $L' \subset \langle L, y \rangle \subset \langle L, L' \rangle \subset \langle L, V_2 \rangle = \overline{L, V_2}$ which is a hyperplane in \mathbb{P}^5 ($\because L \cap V_2 \neq \emptyset$ and $\overline{L, V_2} = \mathbb{P}^4$).

□

But for generic V_2 , the hyperplane section $\overline{L, V_2} \cap X$ is the smooth intersection of two quadrics in 4-space, and we have seen that each of the 16 lines on such a surface meets exactly five other lines on the surface.

Let $K = \{ H \mid H \text{ hyperplane in } \mathbb{P}^5 \text{ containing } L \}$.

$\Rightarrow \dim K = 3$ i.e. $K = \mathbb{P}^3$.

Let $Q = \{ H \mid H \text{ hyperplane in } \mathbb{P}^5, H \supset T_x(X) \text{ for some } x \in L \}$. \Rightarrow Since x varies over L and, for a fixed $x \in L$, $\dim \{ H \mid H \supset T_x(X) \} = 1$,

$\dim Q = 2. \Rightarrow K - Q \neq \emptyset$

Thus, for generic $H \supset L$, $H \cap X$ is smooth on L since $H + T_x(X) = \mathbb{P}^5$.