

$V_0(N) \cap \sigma_{2,1} =$ The set of all lines contained in H , containing p , contained in some quadric of N

$\overline{P_1 P_2}$, $\overline{P_1 P_3}$ & $\overline{P_1 P_4}$ are contained in H , and contain p . Remember they are in L , since $\overline{P_1 P_2} + \overline{P_3 P_4}$, $\overline{P_1 P_3} + \overline{P_2 P_4}$, & $\overline{P_1 P_4} + \overline{P_2 P_3}$ are members of L , see P742.

$$\Rightarrow \#(V_0(N) \cap \sigma_{2,1}) = 3$$

$$\text{Let } V_0(N) \sim a \sigma_1. \Rightarrow \sigma_1 \cdot \sigma_{2,1} = 1$$

$$\Rightarrow V_0(N) \sim 3 \sigma_1$$

□

Finally let W be a generic web of quadrics. Since, in this case the set $V_0(W)$ of all lines on W is all of $G(2,4)$, we will be concerned with the variety $V_1(W) \subset G(2,4)$ of lines lying on a pencil of quadrics from W .

¶ Suppose $W = \{x_0 \sigma_0 + x_1 \sigma_1 + x_2 \sigma_2 + x_3 \sigma_3, \sigma_i \text{ generic quadrics}\}$. Given an arbitrary line $l \in G(2,4)$, choose distinct three points $p_1, p_2, p_3 \in l$.

Consider the following equations:

$$\left. \begin{aligned} x_0 \sigma_0(p_1) + x_1 \sigma_1(p_1) + x_2 \sigma_2(p_1) + x_3 \sigma_3(p_1) &= 0 \\ x_0 \sigma_0(p_2) + x_1 \sigma_1(p_2) + x_2 \sigma_2(p_2) + x_3 \sigma_3(p_2) &= 0 \\ x_0 \sigma_0(p_3) + x_1 \sigma_1(p_3) + x_2 \sigma_2(p_3) + x_3 \sigma_3(p_3) &= 0 \end{aligned} \right\} \dots (*)$$

$\Rightarrow \exists$ nontrivial solutions, i.e. \exists not all zero solutions x_0, x_1, x_2, x_3 satisfying $(*)$.

\Rightarrow Since $x_0 \sigma_0 + \dots + x_3 \sigma_3$ is a quadric, $l \subset \{x_0 \sigma_0 + \dots + x_3 \sigma_3 = 0\} \Rightarrow V_0(W) = G(2,4)$. □