

$$I = \{(p, \Lambda_n) : p \in \Lambda \subset \mathbb{F}^1 \subset \mathbb{F} \times G(n+1, 2n+2)\}.$$

As before, the fibers of the projection map

$$\pi_2: I \longrightarrow \Sigma_n \subset G(n+1, 2n+2) \text{ are isomorphic to } \mathbb{P}^n,$$

$$\mathbb{F} \quad \Sigma_n = \text{Set of all } n\text{-planes on } \mathbb{F}_{2n}$$

$$\Rightarrow \pi_2^{-1}(\Lambda) = \{p \mid p \in \Lambda\} \cong \mathbb{P}^n. \quad \sqcup$$

and the fibers of  $\pi_1: I \longrightarrow \mathbb{F}$  is isomorphic to  $\Sigma_{n-1}$ .

$$\mathbb{F} \quad \forall p \in \mathbb{F}, \quad \pi_1^{-1}(p) = \text{Set of all } (n-1)\text{-planes on } \widetilde{\mathbb{F}}_{2n-2} \\ = \Sigma_{n-1}. \quad \sqcup$$

In this case, however, by induction  $\Sigma_{n-1}$  is disjoint union of two irreducible varieties of dimension  $n(n-1)/2$ . The connected components of the fibers of  $\pi_1$  thus constitute an unbranched 2-sheeted cover of  $\mathbb{F}$ , which, since  $\mathbb{F}$  is rational and hence simply connected, must be disconnected.

$\mathbb{F}$  Let  $\Sigma_{n-1} = A \cup B$ .  $A, B$  are two irreducible families.

$$\Rightarrow A \cap B = \emptyset \text{ since otherwise } A \cup B \text{ are reducible.}$$

$$\dim A = \dim B = n(n-1)/2.$$

According to P495, example 3,  $\mathbb{F}$  is birational to  $\mathbb{P}^{2n}$ , i.e., by the definition on P493,  $\mathbb{F}$  is rational.

$$\Rightarrow \text{By the result 5 on P494, } \pi_1(\mathbb{F}) = \pi_1(\mathbb{P}^{2n}) = 0$$

$$\Rightarrow \mathbb{F} \text{ is simply connected.}$$