for any B, B' skew-symmetric.)

Γ According to P193,

$$P = \left\{ \left(\begin{matrix} 1 & & 0 \\ & \ddots & \\ 0 & & 1 \end{matrix} \quad B \right) \;\middle|\; B \quad \text{an } (n+1)\times(n+1) \text{ matrix} \right\}$$

forms an open set in $G(n+1, 2n+2)$.

$\Rightarrow P \overset{\text{"}P_0}{\cap} \Sigma_n$ is open in Γ.

$$\Lambda_B = \begin{pmatrix} I, & B \end{pmatrix} = \begin{pmatrix} 1 & 0 & \cdots & 0 & b_{0,0} & \cdots & b_{0,n} \\ \vdots & \vdots & \vdots & & & & \\ 0 & 0 & \cdots & 1 & b_{n,0} & \cdots & b_{n,n} \end{pmatrix}$$

$$\Lambda_{B'} = \begin{pmatrix} I, & B' \end{pmatrix} = \begin{pmatrix} 1 & 0 & \cdots & 0 & b'_{0,0} & \cdots & b_{0,n} \\ \vdots & & & & \vdots & & \vdots \\ 0 & 0 & \cdots & 1, & b'_{n,0} & \cdots & b_{n,n} \end{pmatrix}$$

$B-B'$ is skew-symmetric

By the well-known fact (see Algebra by Lang, P371 Theorem6, and refer to Differential Geometric Structures