$\Rightarrow$ We proved the claim.

In general, since $\dim(\Lambda_0 \cap V_{b_i}) \leq \dim(\Lambda_0 \cap V_{b_j})$, if $i<j$, by doing the above process in turn, we get $\Lambda \in G(k,n)$ with $\dim(\Lambda \cap V_{b_i}) = i$ s.t $\| \varphi(\Lambda) - \varphi(\Lambda_0) \| < \epsilon$.

In other words, do the process for the last $k \times (k+a_j-j)$ minor of Λ_0 in case j_1 is the largest number with $\dim(\Lambda_0 \cap V_{b_{j_1}}) > j_1$.

Next do the process for the second largest number with $\dim(\Lambda_0 \cap V_{b_{j_2}}) > j_2$.

For example. again $b_1 = 2$. $b_2 = 5$. $b_3 = 7$.
$\Lambda_0 \in U_{\{1,2,4\}}$.

$$\Lambda_0 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 2 & 1 & 4 & 0 & 0 & 0 & 0 \end{pmatrix}$$

$\Rightarrow \dim(\Lambda_0 \cap V_{b_1}) = 2 \quad \dim(\Lambda_0 \cap V_{b_2}) = 3 \quad \dim(\Lambda_0 \cap V_{b_3}) = 3$

First, the last 3×2 has rank 0. O.K.

Second, the last 3×4 has rank 0. $\Rightarrow$ rank $1 = 3-2$

Consider. $\Lambda_1 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 2 & 1 & 4 & \delta_1 & 0 & 0 & 0 \end{pmatrix}$

Third, the last 3×7 of Λ_1 has rank $1. \Rightarrow$ should be of rank $2 = 3-1$.

Choose $\Lambda_2 = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & \delta_2 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 2 & 1 & 4 & \delta_1 & 0 & 0 & 0 \end{pmatrix}$. $\Rightarrow \| \Lambda_2 - \Lambda_0 \| < \epsilon$.