

$$\begin{array}{ccc}
Tm \otimes \mathbf{P}(\vec{n}, k) \cdot T\vec{n} & \xrightarrow{\sigma^*} & Tm \otimes \mathbf{P}(\vec{n}, k) \cdot T\vec{n} \\
\downarrow \sigma_* & & \downarrow \\
Tm \otimes \mathbf{P}(\vec{n}, k) \cdot T\vec{n} & \longrightarrow & Tk
\end{array}$$