

$$S^{n-1} := \{x \in \mathbb{R}^n \mid \|x\| = 1\} \mathbb{R}^n$$

$$S^{n-1} n - 1 \mathbb{R}^n$$

$$S^{n-1} \mathbb{R}^n$$

$$N := e_n S := -e_n \sigma_+ : S^{n-1} \setminus \{N\} \rightarrow \mathbb{R}^{n-1} \sigma_- : S^{n-1} \setminus \{S\} \rightarrow \mathbb{R}^{n-1}$$

$$\sigma_+(x) := Nx \mathbb{R}^{n-1} x_n = 0.$$

$$\sigma_-(x) := Sx \mathbb{R}^{n-1} x_n = 0.$$

$$\sigma_{\pm}$$

$$\sigma_{\pm} S^{n-1}$$

$$\varphi = \sigma_+ \circ \sigma_-^{-1} : \mathbb{R}^{n-1} \setminus \{0_{\mathbb{R}^{n-1}}\} \rightarrow \mathbb{R}^{n-1} \setminus \{0_{\mathbb{R}^{n-1}}\}$$

$$\{\sigma_+, \sigma_-\} S^{n-1}$$

$$(n-1)|\nu|(S^{n-1})$$

$$S^2$$

$$T(r, R)Tf : \mathbb{R}^2 \rightarrow \mathbb{R}^3$$

$$f(u, v) = \begin{pmatrix} (R + r \cos u) \cos v \\ (R + r \cos u) \sin v \\ r \sin u \end{pmatrix}.$$

$$T\mathbb{R}^3$$

$$T$$

$$T$$

$$T$$

$$\gamma : \mathbb{R} \rightarrow \mathbb{R}^2 T > 0 \gamma(t+T) = \gamma(t) t \in \mathbb{R} \|\gamma'(t)\| = 1 t \in \mathbb{R}$$

$$C := \text{im}(\gamma) \mathbb{R}^2$$

$$\lambda : S^1 \rightarrow C$$

$$\gamma(t) = (h(t), k(t)) hk : \mathbb{R} \rightarrow \mathbb{R} h(t) > 0 t \in \mathbb{R} S C O x_2 O x_3 \mathbb{R}^3$$

$$S\mathbb{R}^3$$

$$ST$$

$$S$$

$$S$$

$$\int_S K |\nu| S$$

