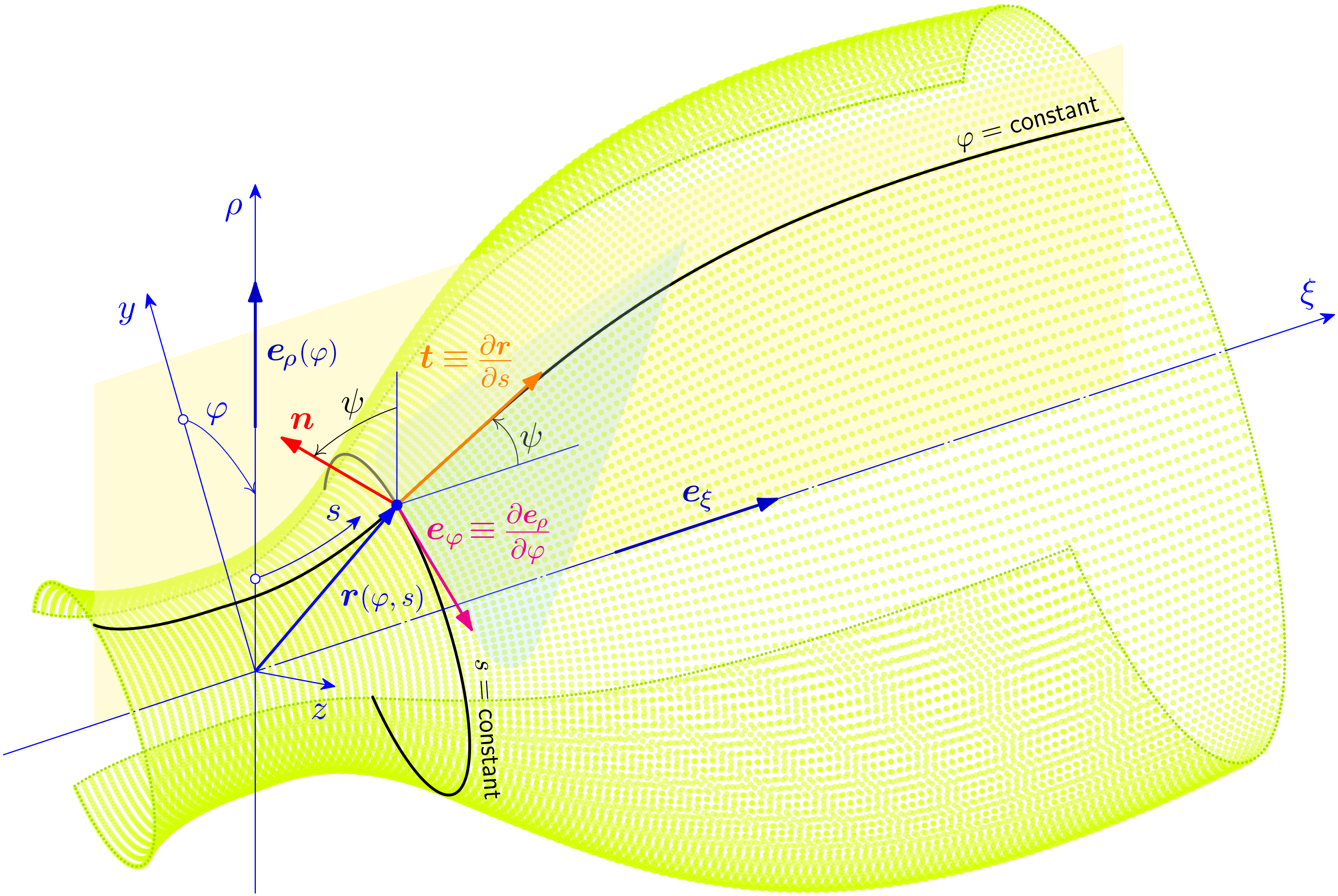


ρ
y
$\boldsymbol{e}_\rho(\varphi)$
φ
ψ
$\boldsymbol{n}$
$\boldsymbol{t} \equiv \frac{\partial \boldsymbol{r}}{\partial s}$
ψ
$\varphi =$ constant
ξ
s
$\boldsymbol{e}_\varphi \equiv \frac{\partial \boldsymbol{e}_\rho}{\partial \varphi}$
$\boldsymbol{e}_\xi$
$\boldsymbol{r}(\varphi, s)$
$s =$ constant
z

$$q^1 = \varphi, \;\; q^2 = s$$

$$\xi = \xi(s), \;\; \rho = \rho(s), \;\; \frac{\partial \rho}{\partial \varphi} = 0$$

$$\boldsymbol{e}_\xi = \textsf{constant}, \;\; \boldsymbol{e}_\rho(\varphi) = \boldsymbol{e}_y \cos\varphi + \boldsymbol{e}_z \sin\varphi$$

$$\boldsymbol{r}(q^1, q^2) = \boldsymbol{r}(\varphi, s) = \xi(s)\,\boldsymbol{e}_\xi + \rho(s)\,\boldsymbol{e}_\rho(\varphi)$$

$$\boldsymbol{r} = \xi \boldsymbol{e}_\xi + \rho \boldsymbol{e}_\rho$$

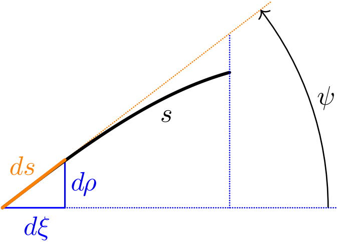
$$\boldsymbol{r}_{\partial 1} = \partial_1 \boldsymbol{r} = \partial_\varphi \boldsymbol{r} = \frac{\partial \boldsymbol{r}}{\partial \varphi} = \rho \frac{\partial \boldsymbol{e}_\rho}{\partial \varphi} = \rho \boldsymbol{e}_\varphi, \;\; \boldsymbol{e}_\varphi \equiv \frac{\partial \boldsymbol{e}_\rho}{\partial \varphi} = -\sin\varphi\,\boldsymbol{e}_y + \cos\varphi\,\boldsymbol{e}_z$$

$$\boldsymbol{r}_{\partial 2} = \partial_2 \boldsymbol{r} = \partial_s \boldsymbol{r} = \frac{\partial \boldsymbol{r}}{\partial s} = \frac{\partial \xi}{\partial s} \boldsymbol{e}_\xi + \frac{\partial \rho}{\partial s} \boldsymbol{e}_\rho = \boldsymbol{t}$$

$$\boldsymbol{r}^1 = \rho^{-1} \boldsymbol{e}_\varphi$$

$$\boldsymbol{r}^2 = \boldsymbol{t}$$

$$\boldsymbol{r}_{\partial 3} = \boldsymbol{r}^3 = \boldsymbol{n} = \boldsymbol{e}_\varphi \times \boldsymbol{t}$$



$$\frac{d\xi}{ds} = \cos\psi$$

$$\frac{d\rho}{ds} = \sin\psi$$