

$$g_{ij} = \begin{bmatrix} (e_x \cdot e_x) & (e_x \cdot e_y) & (e_x \cdot e_z) \\ (e_x \cdot e_y) & (e_y \cdot e_y) & (e_y \cdot e_z) \\ (e_x \cdot e_z) & (e_y \cdot e_z) & (e_z \cdot e_z) \end{bmatrix}$$

$$A = A + A^xe_x + A^ye_y + A^ze_z + A^{xy}e_x \wedge e_y + A^{xz}e_x \wedge e_z + A^{yz}e_y \wedge e_z + A^{xyz}e_x \wedge e_y \wedge e_z$$

$$\begin{aligned} A = & A \\ & + A^xe_x + A^ye_y + A^ze_z \\ & + A^{xy}e_x \wedge e_y + A^{xz}e_x \wedge e_z + A^{yz}e_y \wedge e_z \\ & + A^{xyz}e_x \wedge e_y \wedge e_z \end{aligned}$$

$$\begin{aligned} A = & A \\ & + A^xe_x \\ & + A^ye_y \\ & + A^ze_z \\ & + A^{xy}e_x \wedge e_y \\ & + A^{xz}e_x \wedge e_z \\ & + A^{yz}e_y \wedge e_z \\ & + A^{xyz}e_x \wedge e_y \wedge e_z \end{aligned}$$

$$X = X^xe_x + X^ye_y + X^ze_z$$

$$Y = Y^xe_x + Y^ye_y + Y^ze_z$$

$$g_{ij} = \begin{bmatrix} (e_x \cdot e_x) & (e_x \cdot e_y) \\ (e_x \cdot e_y) & (e_y \cdot e_y) \end{bmatrix}$$

$$X = X^xe_x + X^ye_y$$

$$A = A + A^{xy}e_x \wedge e_y$$