$$|\mathbf{I} + \epsilon M_{11} \epsilon M_{21} + \epsilon M_{31} + \epsilon M_{41} + \epsilon M_{51}$$

$$|\epsilon M_{12} 1 + \epsilon M_{22} \epsilon M_{32} + \epsilon M_{42} + \epsilon M_{52}$$

$$|\mathbf{I} + \epsilon \mathbf{M}| = |\epsilon M_{13} + \epsilon M_{23} 1 + \epsilon M_{33} \epsilon M_{43} + \epsilon M_{53}$$

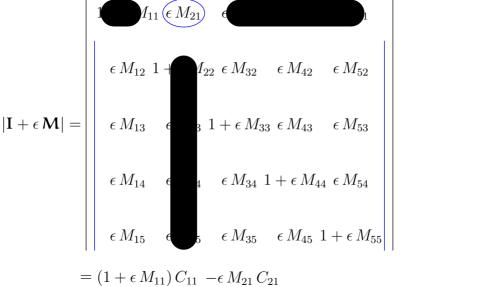
$$|\epsilon M_{14} + \epsilon M_{24} + \epsilon M_{34} 1 + \epsilon M_{44} \epsilon M_{54}$$

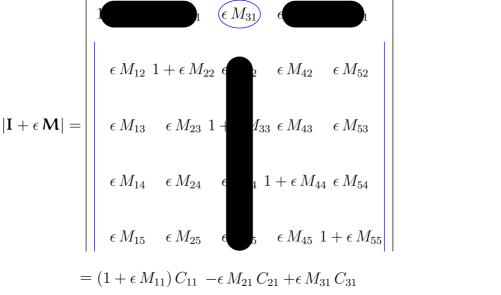
$$|\epsilon M_{15} + \epsilon M_{25} + \epsilon M_{35} + \epsilon M_{45} 1 + \epsilon M_{55}$$

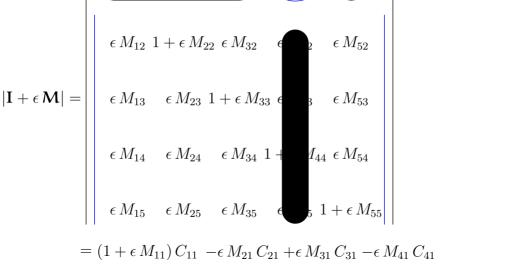
$$|\mathbf{I} + \epsilon \mathbf{M}| = \begin{vmatrix} \epsilon & 0 \\ 2 & 1 + \epsilon M_{22} & \epsilon M_{32} & \epsilon M_{42} & \epsilon M_{52} \\ \epsilon & 0 \\ 3 & \epsilon M_{23} & 1 + \epsilon M_{33} & \epsilon M_{43} & \epsilon M_{53} \end{vmatrix}$$

$$\epsilon & 0 \\ 4 & \epsilon M_{24} & \epsilon M_{34} & 1 + \epsilon M_{44} & \epsilon M_{54} \\ \epsilon & 0 \\ 5 & \epsilon M_{25} & \epsilon M_{35} & \epsilon M_{45} & 1 + \epsilon M_{55} \end{vmatrix}$$

$$= (1 + \epsilon M_{11}) C_{11}$$







$$|\mathbf{I} + \epsilon \mathbf{M}| = \begin{vmatrix} \epsilon M_{12} & 1 + \epsilon M_{22} & \epsilon M_{32} & \epsilon M_{42} & \epsilon \\ \epsilon M_{13} & \epsilon M_{23} & 1 + \epsilon M_{33} & \epsilon M_{43} & \epsilon \\ \epsilon M_{14} & \epsilon M_{24} & \epsilon M_{34} & 1 + \epsilon M_{44} & \epsilon \\ \epsilon M_{15} & \epsilon M_{25} & \epsilon M_{35} & \epsilon M_{45} & 1 + \delta \\ = (1 + \epsilon M_{11}) C_{11} & -\epsilon M_{21} C_{21} + \epsilon M_{31} C_{31} - \epsilon M_{41} C_{41} + \epsilon M_{51} C_{51} \end{vmatrix}$$

$$|\mathbf{I} + \epsilon M_{11} \epsilon M_{21} + \epsilon M_{31} + \epsilon M_{41} + \epsilon M_{51}$$

$$|\epsilon M_{12} 1 + \epsilon M_{22} \epsilon M_{32} + \epsilon M_{42} + \epsilon M_{52}$$

$$|\epsilon M_{13} + \epsilon M_{23} 1 + \epsilon M_{33} \epsilon M_{43} + \epsilon M_{53}$$

$$|\epsilon M_{14} + \epsilon M_{24} + \epsilon M_{34} 1 + \epsilon M_{44} \epsilon M_{54}$$

$$|\epsilon M_{15} + \epsilon M_{25} + \epsilon M_{35} + \epsilon M_{45} 1 + \epsilon M_{55}|$$

$$= (1 + \epsilon M_{11}) C_{11} + O(\epsilon^{2})$$

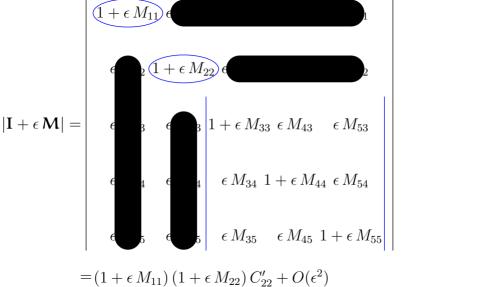
$$|\mathbf{I} + \epsilon \mathbf{M}| = \begin{vmatrix} \epsilon & 0 \\ 2 & 1 + \epsilon M_{22} & \epsilon M_{32} & \epsilon M_{42} & \epsilon M_{52} \end{vmatrix}$$

$$|\mathbf{I} + \epsilon \mathbf{M}| = \begin{vmatrix} \epsilon & 0 \\ 3 & \epsilon M_{23} & 1 + \epsilon M_{33} & \epsilon M_{43} & \epsilon M_{53} \end{vmatrix}$$

$$|\epsilon & 0 \\ 4 & \epsilon M_{24} & \epsilon M_{34} & 1 + \epsilon M_{44} & \epsilon M_{54} \end{vmatrix}$$

$$|\epsilon & 0 \\ 5 & \epsilon M_{25} & \epsilon M_{35} & \epsilon M_{45} & 1 + \epsilon M_{55} \end{vmatrix}$$

$$= (1 + \epsilon M_{11}) C_{11} + O(\epsilon^{2})$$



$$|\mathbf{I} + \epsilon M_{11} \epsilon M_{21} + \epsilon M_{31} + \epsilon M_{41} + \epsilon M_{51}$$

$$|\epsilon M_{12} 1 + \epsilon M_{22} \epsilon M_{32} + \epsilon M_{42} + \epsilon M_{52}$$

$$|\epsilon M_{13} + \epsilon M_{23} 1 + \epsilon M_{33} \epsilon M_{43} + \epsilon M_{53}$$

$$|\epsilon M_{14} + \epsilon M_{24} + \epsilon M_{34} 1 + \epsilon M_{44} \epsilon M_{54}$$

$$|\epsilon M_{15} + \epsilon M_{25} + \epsilon M_{35} + \epsilon M_{45} 1 + \epsilon M_{55}$$

$$= \prod (1 + \epsilon M_{ii}) + O(\epsilon^{2})$$

$$|\mathbf{I} + \epsilon M_{11} \epsilon M_{21} + \epsilon M_{31} + \epsilon M_{41} + \epsilon M_{51}$$

$$|\epsilon M_{12} 1 + \epsilon M_{22} \epsilon M_{32} + \epsilon M_{42} + \epsilon M_{52}$$

$$|\epsilon M_{13} + \epsilon M_{23} 1 + \epsilon M_{33} \epsilon M_{43} + \epsilon M_{53}$$

$$|\epsilon M_{14} + \epsilon M_{24} + \epsilon M_{34} 1 + \epsilon M_{44} \epsilon M_{54}$$

$$|\epsilon M_{15} + \epsilon M_{25} + \epsilon M_{35} + \epsilon M_{45} 1 + \epsilon M_{55}$$

$$= (1 + \epsilon \sum_{i} M_{ii}) + O(\epsilon^{2})$$

$$|\mathbf{I} + \epsilon \, \mathbf{M}| = \begin{vmatrix} \epsilon \, M_{12} \, 1 + \epsilon \, M_{22} \, \epsilon \, M_{32} & \epsilon \, M_{42} & \epsilon \, M_{52} \end{vmatrix}$$

$$|\mathbf{I} + \epsilon \, \mathbf{M}| = \begin{vmatrix} \epsilon \, M_{13} & \epsilon \, M_{23} \, 1 + \epsilon \, M_{33} \, \epsilon \, M_{43} & \epsilon \, M_{53} \end{vmatrix}$$

$$|\epsilon \, M_{14} \quad \epsilon \, M_{24} \quad \epsilon \, M_{34} \, 1 + \epsilon \, M_{44} \, \epsilon \, M_{54}$$

$$|\epsilon \, M_{15} \quad \epsilon \, M_{25} \quad \epsilon \, M_{35} \quad \epsilon \, M_{45} \, 1 + \epsilon \, M_{55}$$

$$= (1 + \epsilon \, \text{tr} \, \mathbf{M}) + O(\epsilon^2)$$

 $1 + \epsilon M_{11} \epsilon M_{21} \quad \epsilon M_{31} \quad \epsilon M_{41} \quad \epsilon M_{51}$