

## Second order Magnitudes and Second Fundamental Form: —

An quadratic eq<sup>n</sup> in  $du, dv$  of the form

$$L du^2 + M du dv + N dv^2$$

is called II<sup>nd</sup> fundamental form  
where  $L, M, N$  is called II<sup>nd</sup> fundamental Coefficient

Solve

$$\begin{aligned} \text{where} \quad L &= \gamma_{11} \cdot N \\ M &= \gamma_{12} \cdot N = \gamma_{21} \cdot N \\ N &= \gamma_{22} \cdot N \end{aligned}$$

$$L = -\gamma_1 \cdot N_1$$

$$M = -\gamma_1 \cdot N_2 = -\gamma_2 \cdot N_1$$

$$N = -\gamma_2 \cdot N_2$$

$$HL = [\gamma_{11}, \gamma_1, \gamma_2] = \gamma_{11} \cdot [\gamma_1, \gamma_2]$$

$$HM = [\gamma_{12}, \gamma_1, \gamma_2] = [\gamma_{21}, \gamma_1, \gamma_2] \\ = [\gamma_2 \cdot (\gamma_1, \gamma_2)]$$

$$HN = [\gamma_{22}, \gamma_1, \gamma_2] = \gamma_{22} \cdot (\gamma_1, \gamma_2)$$