

20/7/10 ES 3 cd

$$C: \begin{cases} x = \alpha^2 \\ y = \alpha^3 - \alpha \\ z = \alpha^4 - 1 \end{cases} \quad Q = (0, 0, -1) \\ \alpha = 0$$

$$x' = 2\alpha \quad x'' = 2 \quad \begin{matrix} 0 & 2 \end{matrix}$$

$$y' = 3\alpha^2 - 1 \quad y'' = 6\alpha \quad \begin{matrix} -1 & 0 \end{matrix}$$

$$z' = 4\alpha^3 \quad z'' = 12\alpha^2 \quad \begin{matrix} 0 & 0 \end{matrix}$$

pidno osc. in Q:

$$\Pi: \begin{vmatrix} x & y & (z+1) \\ 0 & -1 & 0 \\ z & 0 & 0 \end{vmatrix} = 0 \\ z(z+1) = 0$$

Sfera:

$$x^2 + y^2 + z^2 - 2ax - 2by - 2cz + d = 0$$

$$F(x, y, z) =$$

$$\Phi(\alpha) =$$

$$= \alpha^8 + \alpha^6 - 2c\alpha^4 - 3\alpha^4 - 2b\alpha^3 - 2a\alpha^2 + \\ + \alpha^2 + 2b\alpha + d + \alpha + 1$$

$$\Phi'(\alpha) =$$

$$= 8\alpha^7 + 6\alpha^5 - 8c\alpha^3 - 12\alpha^3 - 6b\alpha^2 - 4a\alpha + 2\alpha + 2b$$

$$\Phi''(\alpha) = 56\alpha^6 + 30\alpha^4 - 24c\alpha^2 - 36\alpha^2 - 12b\alpha - 4a + 2$$

$$\left. \begin{array}{l} \Phi'(0) = 0 \\ \Phi''(0) = 0 \\ \Phi'''(0) = 0 \end{array} \right\} \begin{array}{l} d + 2c + 1 = 0 \\ 2b = 0 \\ -4a + 2 = 0 \end{array} \quad \left\{ \begin{array}{l} c = \frac{-1-k}{2} \\ b = 0 \\ a = \frac{1}{2} \\ d = k \end{array} \right.$$

$$x^2 + 0x^2 + x^2 - x + (1+k)x + k = 0$$

$$C_k = \left( \frac{1}{2}, 0, \frac{-1-k}{2} \right)$$

Impongo  $C_k \in \Pi_{osc}$ :

$$\frac{-1-k}{2} + 1 = 0 \quad -1-k+2=0$$

$$k=1$$

$$C \equiv \left( \frac{1}{2}, 0, -1 \right) \quad d=k=1$$

$$d = a^2 + b^2 + c^2 - r^2 =$$

$$1 = \frac{1}{4} + 0 + 1 - r^2 \quad r^2 = \frac{1}{4}$$

$$r = \frac{1}{2} \quad \text{Flessione}^{(0)} = 2$$

$$\text{Es. 6 } \Sigma : \begin{cases} x = u^2 - uv \\ y = v \\ z = u - v^2 \end{cases}$$

1) eq. cart.

2) tang. es. in un punto  $P$  sempl. ord.

$$\begin{cases} x = u^2 - uv \\ z = u - v^2 \\ u = z + v^2 \end{cases}$$

$$-x + (z + v^2)^2 - (z + v^2)v = 0$$

$$\Sigma : z^2 + 2v^2z - yz + v^4 - y^3 - x = 0$$

$$F(x, y, z) =$$

$O = (0, 0, 0)$  è punto semplice  
di  $\Sigma$

$x = 0$  è il piano tangente  
a  $\Sigma$  in  $O$

Generica tang. a  $\Sigma$  in  $O$ :

$$\begin{cases} x = 0 \\ y = m\alpha \\ z = n\alpha \end{cases}$$

$$\Phi''(\alpha) = 2n^2 + 12\alpha m^2 - 2mn + 12\alpha^2 m^4 - 6\alpha m^3$$

$$\Phi''(0) = 2n^2 - 2mn$$

(contatto di ord  $\geq 2$ )

$$\Leftrightarrow n(n-m) = 0$$

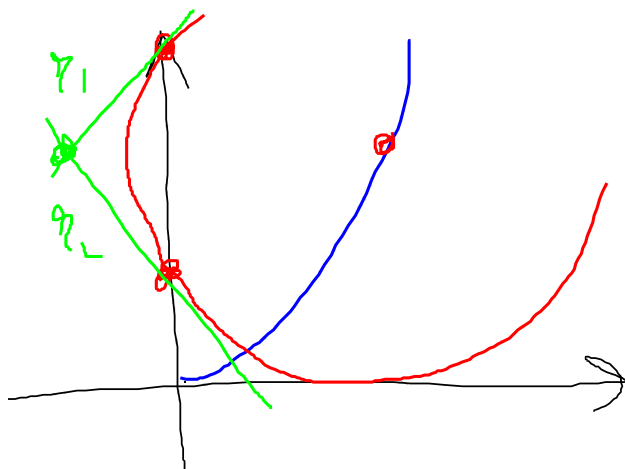
$$\begin{array}{l} n=0 \\ n=m \end{array}$$

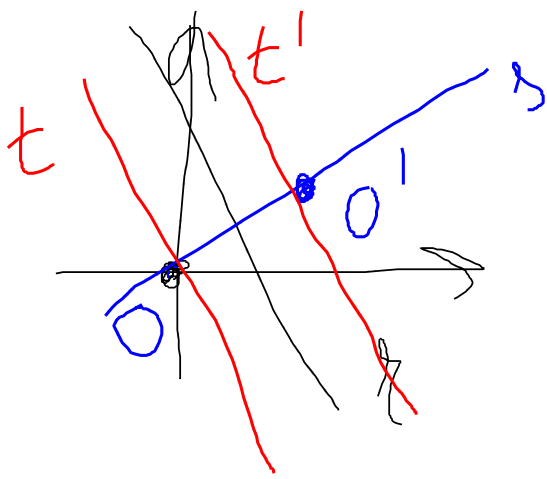
$$\left\{ \begin{array}{l} x=0 \\ y=\alpha \\ z=0 \end{array} \right.$$

$$\left\{ \begin{array}{l} x=0 \\ y=\alpha \\ z=\alpha \end{array} \right.$$

$$\left\{ \begin{array}{l} x=0 \\ z=\alpha \end{array} \right. \quad \left\{ \begin{array}{l} x=0 \\ y=z \end{array} \right.$$

ES 23





$$\Gamma_1 = s \text{ cont. z.v.}$$

$$\Gamma_2 = t \cup t'$$

