BY GIMUSI 05/06/15

$$\vec{E} = (x, y, x-z) \qquad S: \{(u+v, v, u-v),\ (u,v) \in [0,1]\times[0,2]\}$$

<u>VETTORE NORMALE A S</u>

ORIENTATO SECONDO z^+

$$\Phi(u,v) = (u+v, v, u-v) \rightsquigarrow \begin{array}{c} \Phi_u \\ \Phi_v \end{array}\begin{pmatrix} 1 & 0 & 1 \\ 1 & 1 & -1 \end{pmatrix} \rightsquigarrow \vec{N} = (-1, 2, 1)$$

<u>OSS</u> $\vec{N}$ COSTANTE $\rightsquigarrow$ S È UN PIANO, INFATTI:

$$z = u - v = x - 2y \rightsquigarrow -x + 2y + z = 0 \equiv \vec{N}\cdot\begin{pmatrix} x \\ y \\ z \end{pmatrix} = 0$$

VERSORE NORMALE $\vec{n} = \dfrac{\vec{N}}{\|\vec{N}\|} = \dfrac{1}{\sqrt{6}}(-1, 2, 1)$

$$\text{FLUSSO} = \int_S \vec{E}\cdot\vec{n}\, d\sigma \qquad d\sigma = \|\vec{N}\|\, du\, dv \rightsquigarrow \vec{n}\, d\sigma = \vec{N}\, du\, dv$$

$$\vec{E} = (u+v, v, 2v) \equiv \text{VETTORE } \vec{E} \text{ SU } S$$

$$\text{FLUSSO} = \int_0^2\int_0^1 \vec{E}\cdot\vec{N}\, du\, dv = \int_0^2\int_0^1 (-u-v+2v+2v)\, du\, dv =$$

$$= \int_0^2\int_0^1 (-u+3v)\, du\, dv = \int_0^2 \left[-\frac{u^2}{2} + 3uv\right]_0^1 dv =$$

$$= \int_0^2 \left(-\frac{1}{2} + 3v\right) dv = \left[-\frac{v}{2} + \frac{3}{2}v^2\right]_0^2 = -1 + 6 = 5$$