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Mecánica de Medios Continuos
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Formulario de Notación Indicial

1. $\epsilon_{inm} = \begin{cases} 1 & \text{permutación par,} \\ 0 & \text{indices repetidos,} \\ -1 & \text{permutación impar} \end{cases}$

2. $\delta_{ij} = \begin{cases} 1 & i = j, \\ 0 & i \neq j \end{cases}$

3. $\epsilon_{inm}\epsilon_{jpq} = \begin{vmatrix} \delta_{ij} & \delta_{ip} & \delta_{iq} \\ \delta_{nj} & \delta_{np} & \delta_{nq} \\ \delta_{mj} & \delta_{mp} & \delta_{mq} \end{vmatrix} = \delta_{ij}\delta_{np}\delta_{mq} + \delta_{ip}\delta_{nq}\delta_{mj} + \delta_{iq}\delta_{nj}\delta_{mp} - \delta_{ij}\delta_{nq}\delta_{mp} - \delta_{ip}\delta_{nj}\delta_{mq} - \delta_{iq}\delta_{np}\delta_{mj}$

4. $\delta_{ii} = \delta_{11} + \delta_{22} + \delta_{33} = 3$

5. $\delta_{ij}\delta_{ij} = \delta_{1j}\delta_{1j} + \delta_{2j}\delta_{2j} + \delta_{3j}\delta_{3j} = 3$

6. $\delta_{ij}\delta_{ik}\delta_{jk} = \delta_{1j}\delta_{1k}\delta_{jk} + \delta_{2j}\delta_{2k}\delta_{jk} + \delta_{3j}\delta_{3k}\delta_{jk} = 3$

7. $\delta_{ij}\delta_{jk} = \delta_{i1}\delta_{1k} + \delta_{i2}\delta_{2k} + \delta_{i3}\delta_{3k} = \delta_{ik}$

8. $\delta_{ij}A_{ik} = \delta_{1j}A_{1k} + \delta_{2j}A_{2k} + \delta_{3j}A_{3k} = A_{jk}$

9. Producto Escalar $\vec{A} \cdot \vec{B} = A_i B_i$

10. Producto Vectorial $\vec{A} \times \vec{B} = \epsilon_{inm} A_n B_m$

11. Gradiente de un campo Escalar $Grad(\phi) = \vec{\nabla}\phi$, donde $\phi = \phi(x_1, x_2, x_3)$: $\vec{\nabla}\phi = \frac{\partial \phi}{\partial x_i} = \phi_{,i}$
    Nota: $_{,i}$ indica la derivada parcial de ϕ respecto de x_i

12. Divergencia de un Campo Vectorial
    $Div(\vec{A}) = \vec{\nabla}\vec{A} = \frac{\partial A_1}{\partial x_1} + \frac{\partial A_2}{\partial x_2} + \frac{\partial A_3}{\partial x_3}$: $\vec{\nabla}\vec{A} = \frac{\partial A_i}{\partial x_i} = A_{i,i}$

13. Rotor de un Campo Vectorial
    $Rot(\vec{A}) = \vec{\nabla} \times \vec{A} = \begin{vmatrix} \hat{\imath} & \hat{\jmath} & \hat{k} \\ \frac{\partial}{\partial x_1} & \frac{\partial}{\partial x_2} & \frac{\partial}{\partial x_3} \\ A_1 & A_2 & A_3 \end{vmatrix}$ $\vec{\nabla} \times \vec{A} = \epsilon_{inm} \frac{\partial}{\partial x_n} A_m = \epsilon_{inm} A_{m,n}$

14. Laplaciano de un Campo Escalar: $\nabla^2\phi = \vec{\nabla} \cdot \vec{\nabla}\phi = \frac{\partial^2 \phi}{\partial x_i^2} = \phi_{,ii}$

15. Laplaciano de un Campo Vectorial: $\nabla^2\vec{A} = \vec{\nabla} \cdot \vec{\nabla}\vec{A} = \frac{\partial^2 A_i}{\partial x_j^2} = A_{i,jj}\hat{e}_i$