

$$f = f$$

$$A = A^r \mathbf{e}_r + A^\theta \mathbf{e}_\theta + A^\phi \mathbf{e}_\phi$$

$$B = B^{r\theta} \mathbf{e}_r \wedge \mathbf{e}_\theta + B^{r\phi} \mathbf{e}_r \wedge \mathbf{e}_\phi + B^{\phi\phi} \mathbf{e}_\theta \wedge \mathbf{e}_\phi$$

$$\nabla f = \partial_r f \mathbf{e}_r + \frac{1}{r} \partial_\theta f \mathbf{e}_\theta + \frac{\partial_\phi f}{r \sin(\theta)} \mathbf{e}_\phi$$

$$\nabla \cdot A = \frac{1}{r} \left( r \partial_r A^r + 2A^r + \frac{A^\theta}{\tan(\theta)} + \partial_\theta A^\theta + \frac{\partial_\phi A^\phi}{\sin(\theta)} \right)$$

$$-I(\nabla \wedge A) = \frac{1}{r} \left( \frac{A^\phi}{\tan(\theta)} + \partial_\theta A^\phi - \frac{\partial_\phi A^\theta}{\sin(\theta)} \right) \mathbf{e}_r + \frac{1}{r} \left( -r \partial_r A^\phi - A^\phi + \frac{\partial_\phi A^r}{\sin(\theta)} \right) \mathbf{e}_\theta + \frac{1}{r} (r \partial_r A^\theta + A^\theta - \partial_\theta A^r) \mathbf{e}_\phi$$

$$\nabla \wedge B = \frac{1}{r} \left( r \partial_r B^{\phi\phi} - \frac{B^{r\phi}}{\tan(\theta)} + 2B^{\phi\phi} - \partial_\theta B^{r\phi} + \frac{\partial_\phi B^{r\theta}}{\sin(\theta)} \right) \mathbf{e}_r \wedge \mathbf{e}_\theta \wedge \mathbf{e}_\phi$$