

$$g \int_{B_R \cap S} \eta \, dx' + \sigma \int_{\partial B_R(0) \cap S} N \cdot \nu \, ds + \int_{\partial B_R(0) \cap \Omega} A \cdot N \, dS \longrightarrow 0 \quad \text{as } R \rightarrow \infty.$$