

Vortex ROV simulator

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$$\dot{\boldsymbol{\eta}} = \boldsymbol{J}(\boldsymbol{\eta})\boldsymbol{\nu} \tag{1}$$

$$\dot{\boldsymbol{\nu}} = (\boldsymbol{M}_{RB} + \boldsymbol{M}_A)^{-1} [-\boldsymbol{C}_{RB}(\boldsymbol{\nu})\boldsymbol{\nu} + \boldsymbol{M}_A\dot{\boldsymbol{\nu}}_c - \boldsymbol{C}_A(\boldsymbol{\nu}_r)\boldsymbol{\nu}_r - \boldsymbol{D}(\boldsymbol{\nu}_r)\boldsymbol{\nu}_r - \boldsymbol{g}(\boldsymbol{\eta}) + \boldsymbol{\tau} + \boldsymbol{\tau}_{\text{ext}}] \tag{2}$$