Congratulations! You passed!

Grade received 100% To pass 80% or higher

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1. A wrench $\mathcal{F}_a$ consists of a linear force $f_a \in \mathbb{R}^3$ and a moment $m_a \in \mathbb{R}^3$, both expressed in the frame {a}. How do we usually write the wrench?

1 / 1 point

- (selected) $\mathcal{F}_a = (m_a, f_a)$
- $\mathcal{F}_a = (f_a, m_a)$

Correct

Just as a twist $\mathcal{V} = (\omega, v)$ has the angular terms first, so does a wrench, so the dot product $\mathcal{F} \cdot \mathcal{V} = \mathcal{F}^{\mathrm{T}}\mathcal{V}$ is power when $\mathcal{F}$ and $\mathcal{V}$ are expressed in the same frame.

2. We know that the power associated with a wrench and twist pair $(\mathcal{F}, \mathcal{V})$ does not depend on whether they are represented in the frame {a} as $(\mathcal{F}_a, \mathcal{V}_a)$ or the frame {b} as $(\mathcal{F}_b, \mathcal{V}_b)$. Therefore, we can write $\mathcal{F}_a^{\mathrm{T}}\mathcal{V}_a = \mathcal{F}_b^{\mathrm{T}}\mathcal{V}_b$ and then use which identity to derive the equation $\mathcal{F}_a = [\mathrm{Ad}_{T_{ba}}]^{\mathrm{T}}\mathcal{F}_b$ relating the representations $\mathcal{F}_a$ and $\mathcal{F}_b$? (Also, remember the matrix identity $(AB)^{\mathrm{T}} = B^{\mathrm{T}}A^{\mathrm{T}}$.)

1 / 1 point

- $\mathcal{V}_a = T_{ab}\mathcal{V}_b$
- $\mathcal{V}_a = T_{ba}\mathcal{V}_b$
- $\mathcal{V}_a = [\mathrm{Ad}_{T_{ba}}]\mathcal{V}_b$

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2. We know that the power ass

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