Aerodynamic and Aeroelastic Shape Optimization of Aircraft Wings

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Thesis corrections

- Page v, publication [P2] title changed to adhere to journal guidelines:

  [P2] **Cian Conlan-Smith** and Casper Schousboe Andreasen. “Aeroelastic optimization of aircraft wings using a coupled three-dimensional panel-beam model”. In: *AIAA Journal* (2020). Accepted/In press.

- Page v, publication [P3] title changed to adhere to journal guidelines:

  [P3] **Cian Conlan-Smith**, Néstor Ramos-García, and Casper Schousboe Andreasen. “Aerodynamic shape optimization of highly non-planar raised and drooped wings”. In: *Journal of Aircraft* (2020). Submitted/under review.

- Page 13, equation 2.4, transpose symbol (“T”) removed from right hand side:

$$\frac{\partial \mathbf{R}}{\partial \mathbf{s}}^{\mathrm{T}} \boldsymbol{\lambda} = -\frac{\partial f}{\partial \mathbf{s}}$$

- Page 24, equation 2.30, bottom right entry in matrix, subscript changed from “xz” to “zz”:

$$\begin{Bmatrix} F_x \\ F_y \\ F_z \\ M_x \\ M_y \\ M_z \end{Bmatrix} = \underbrace{\begin{bmatrix} GA & 0 & 0 & 0 & -GAs_z & 0 \\ 0 & EA & 0 & EAe_z & 0 & -EAe_x \\ 0 & 0 & GA & 0 & GAs_x & 0 \\ 0 & EAe_z & 0 & E(I_{xx}+Ae_z^2) & 0 & -EI_{xz} \\ -GAs_z & 0 & GAs_x & 0 & G(K+A(s_x^2+s_z^2)) & 0 \\ 0 & -EAe_x & 0 & -EI_{xz} & 0 & E(I_{zz}+Ae_x^2) \end{bmatrix}}_{\mathbf{K}_{cs}} \begin{Bmatrix} \gamma_x \\ \gamma_y \\ \gamma_z \\ \kappa_x \\ \kappa_y \\ \kappa_z \end{Bmatrix}$$

- Page 25, equation 2.34, last term updated to integral form:

$$\mathbf{f}_{i,e}(\mathbf{u}) = \int_{l_e} \bar{\mathbf{B}}^{\mathrm{T}} \mathbf{T}(\mathbf{u})^{\mathrm{T}} \mathbf{K}_{cs} \begin{Bmatrix} \boldsymbol{\gamma}_l \\ \boldsymbol{\kappa}_l \end{Bmatrix} dl_e$$