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Isogeometric configuration design sensitivity analysis of finite deformation curved beam structures using Jaumann strain formulation

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Highlights

- Employ geometrically exact beam theory (GEBT) and Jaumann strain formulation for curved beams.
- NURBS basis functions enable to incorporate the exact description of initial geometry such as initial curvature and its tangential derivative.
- Develop an isogeometric configuration DSA method for curved beams with multi-patch junctions.
- C0-continuity of physical displacement or C1-continuity of displacement component at junction is weakly imposed using the Lagrange multiplier method.
- Orientation design variation is exactly expressed by rotational transformation of local coordinates and the GEBT.

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