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VOLUMETRIC T-SPLINE CONSTRUCTION FOR COMPLEX GEOMETRY

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In this talk, we present a novel volumetric parameterization algorithm to construct trivariate solid T-splines using frame fields. Singularity graph of the input model is first calculated from skeleton extraction, which is then used to initialize the 3D frame field. After smoothing and optimizing the obtained frame field, we perform volumetric parameterization with boundary alignment constrains enforced. The integer iso-parametric lines will induce a natural tessellation of the volume. After that, T-junctions are introduced to limit the number of control points in the T-mesh while satisfying the input error constrain. With a valid T-mesh, we construct rational solid T-splines for isogeometric analysis.