T-Splines and Isogeometric Analysis

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T-Splines, Inc.
NURBS

Rectangular        Not watertight        Trimmed
NURBS

Rectangular  Not watertight  Trimmed
NURBS

Rectangular  |  Not watertight  |  Trimmed
NURBS

Rectangular       Not watertight       Trimmed
T-Splines

Model by Tibor Toth
T-Splines

Non-rectangular

Local control

Analysis Suitable

NURBS

T-Splines
T-Splines

Non-rectangular  Local control  Analysis Suitable
T-Splines

Non-rectangular          Local control          Analysis Suitable
Compatibility

“The T-Spline technology addresses some important limitations in conventional NURBS surfaces and is forward and backward compatible with NURBS.”

Dr. Rich Riesenfeld, NURBS inventor, University of Utah
Compatibility

T-Splines

NURBS
T-Splines for Rhino
T-Spline Trimming Curve Conversion
Trimmed NURBS

Untrimmed T-Spline
Error $\approx 10^{-4}$
T-Splines and Isogeometric Analysis

Loading:
- Gravity
- External pressure

Symmetry BCs

$u_z = 0$

Computational domain

(from E. Rank et al.)

Actual domain
T-Splines and Isogeometric Analysis
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