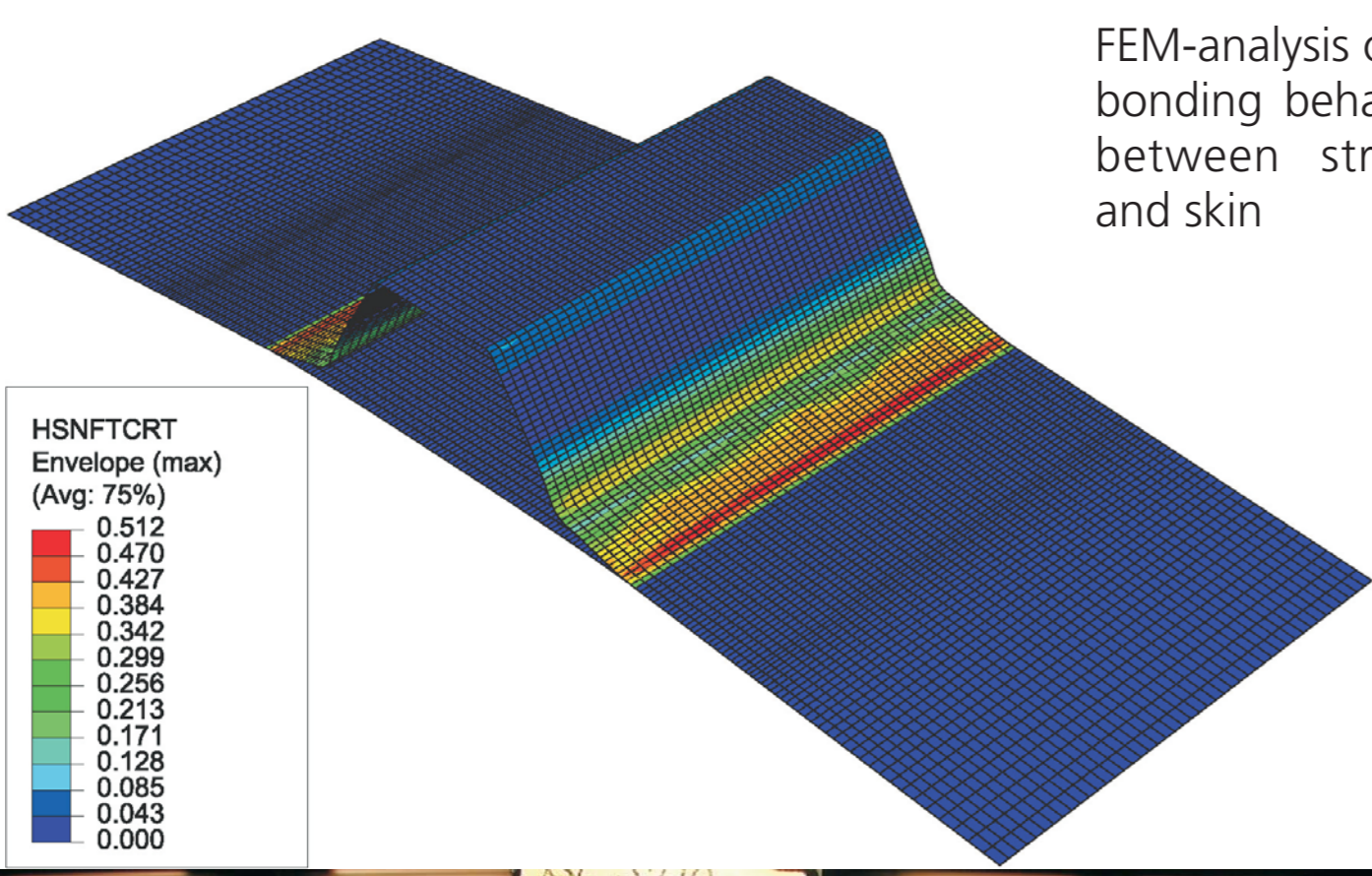


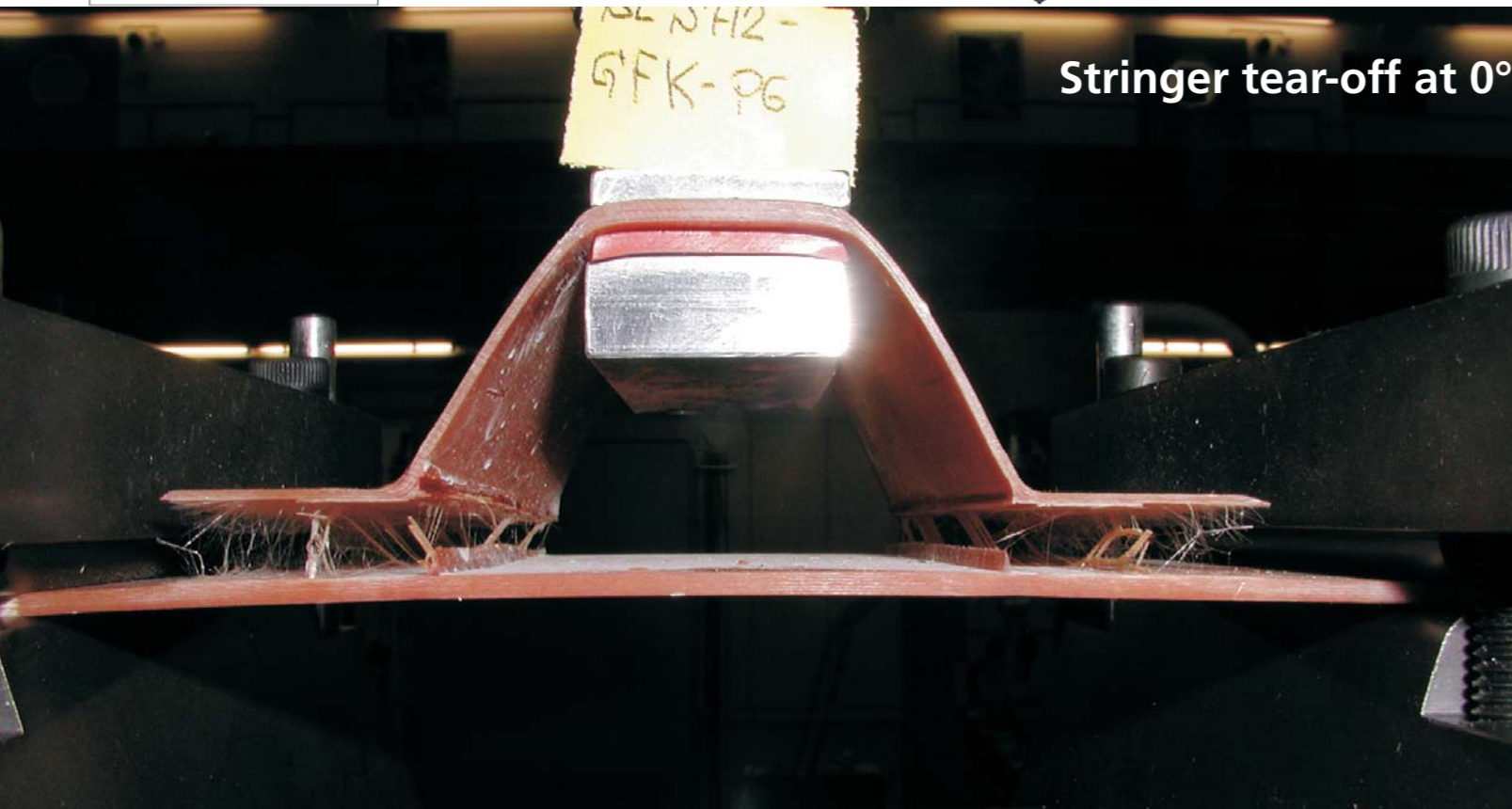
FEM-analysis of de-bonding behaviour between stringer and skin

HSNFTCRT
Envelope (max)
(Avg: 75%)

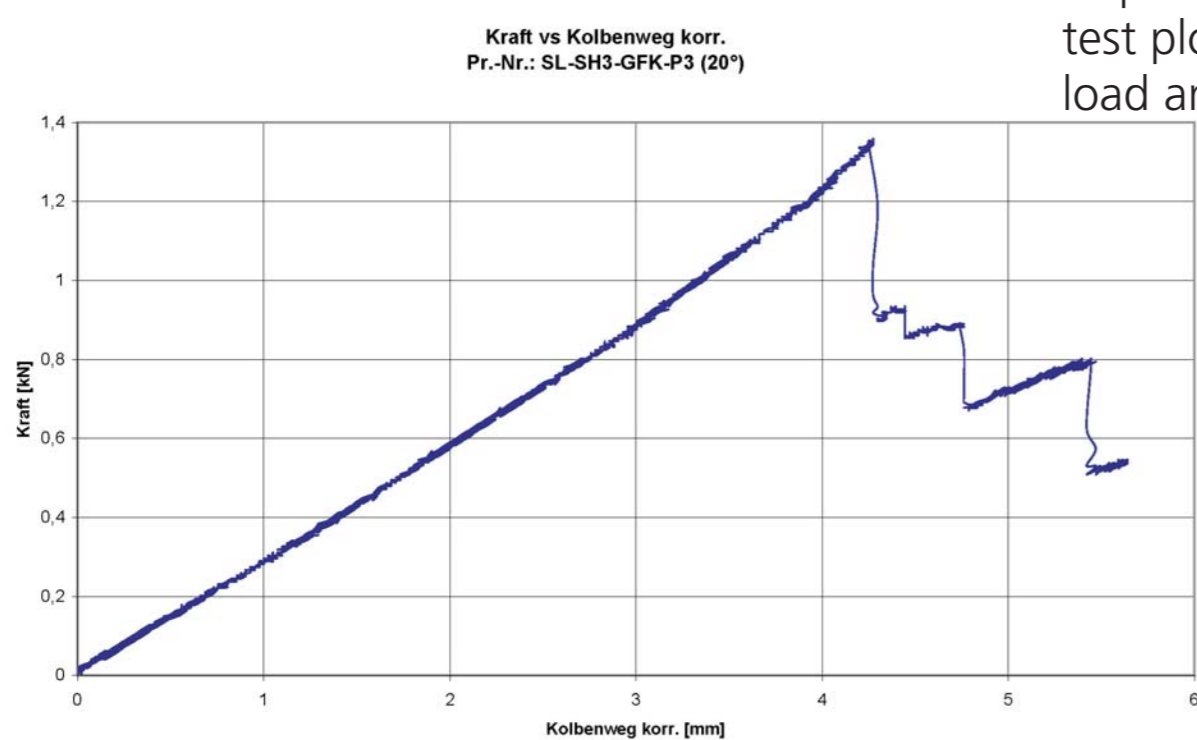
0.512
0.470
0.427
0.384
0.342
0.299
0.256
0.213
0.171
0.128
0.085
0.043
0.000



Stringer tear-off at 0°



Experimental test plot for 20° load angle



Stringer tear-off at 20°



Institut of
Composite Structures
and Adaptive Systems

TESTING AND ANALYSIS OF OMEGA STRINGER DE-BONDING

The interface strength between omega stringers and the skin was tested at DLR Braunschweig. Therefore the stringer is teared-off with a new test device using a standard test machine. Pull angle can be varied from 0° to 45°. With the help of this device omega stringers can be tested according to stresses dominated by fracture Mode I and stresses from combined fracture Mode I and Mode II. This allows to compare different omega stringer geometries and bonding technics. In parallel a de-bonding analyses was made using different numerical approaches (e.g. 3D continuum damage model).

Picture:
Omega Stringer Tear-off Test Device with Specimen



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in der Helmholtz-Gemeinschaft