



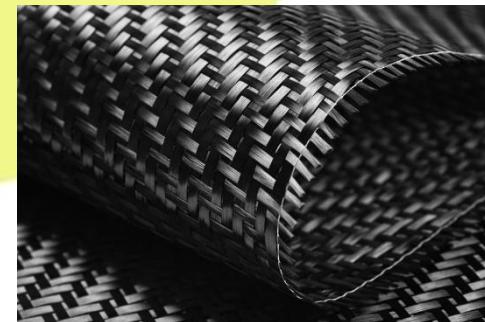
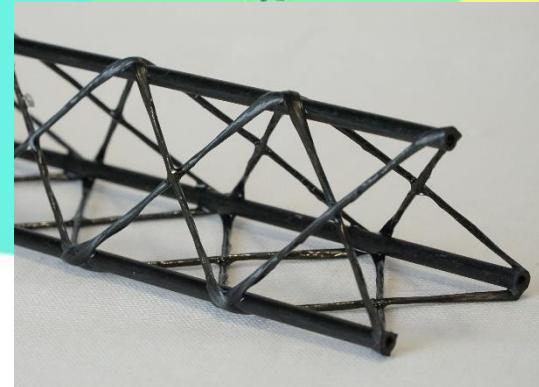
WrapToR Trusses

Progress to Date

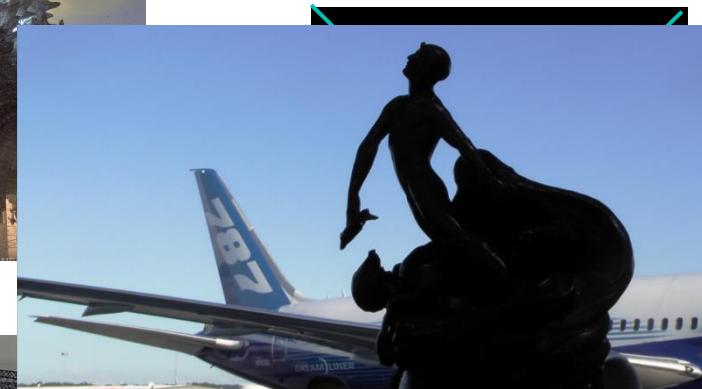
Benjamin King Sutton Woods
28/6/23



Wrapped Tow Reinforced Truss Structures



Origin Story: Gamera



We the undersigned certify that Judith R. Wexler
established on 13 July 2011 with the University of Maryland "Gamera"
the following World Record :

Duration : 11.4 seconds

in Class IF, Human Powered Rotorcraft, General & Feminine, in College Park, MD



United States Patent **Patent No.: US 9,435,060 B2**
Date of Patent: Sep 6, 2016

(21) CONTINUOUS WOUND COMPOSITE TROSS
STRUCTURE

(22) Applicant: University of Maryland, College Park, MD (US); Benjamin S. Woods, Silver Spring, MD (US); Benjamin Otto Berry, Rockville, MD (US); Vadim Bokun, Silver Spring, MD (US)

(23) Assignee: UNIVERSITY OF MARYLAND, COLLEGE PARK, MD (US)

(1*) Notice: Subject my application the date of filing is 15/03/2013, which is equivalent under 35 U.S.C. (154b) by 434 days.

(21) Appl. No. 13/074,865

(22) Filed: May 1, 2013

(65) Prior Publication Data

US 2013/0291709 A1 Nov. 7, 2013

(60) Previous Application - Shuan R. Harley

(74) Attorney, Agent or Firm - Cenic, Del. Soc. Farnell & Schmidt, LLP

(75) Inventor(s) - Shuan R. Harley

(76) International Classification -

(77) International Application Number -

(78) International Filing Date -

(79) International Publication Date -

(80) International Priority Date -

(81) International Application Number -

(82) International Filing Date -

(83) International Publication Date -

(84) International Priority Date -

(85) International Application Number -

(86) International Filing Date -

(87) International Publication Date -

(88) International Priority Date -

(89) International Application Number -

(90) International Filing Date -

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(93) International Application Number -

(94) International Filing Date -

(95) International Publication Date -

(96) International Priority Date -

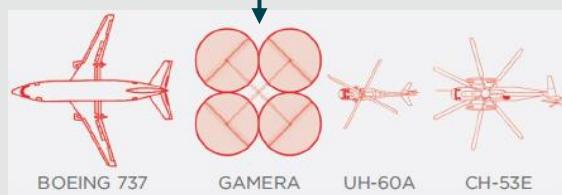
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(98) International Filing Date -

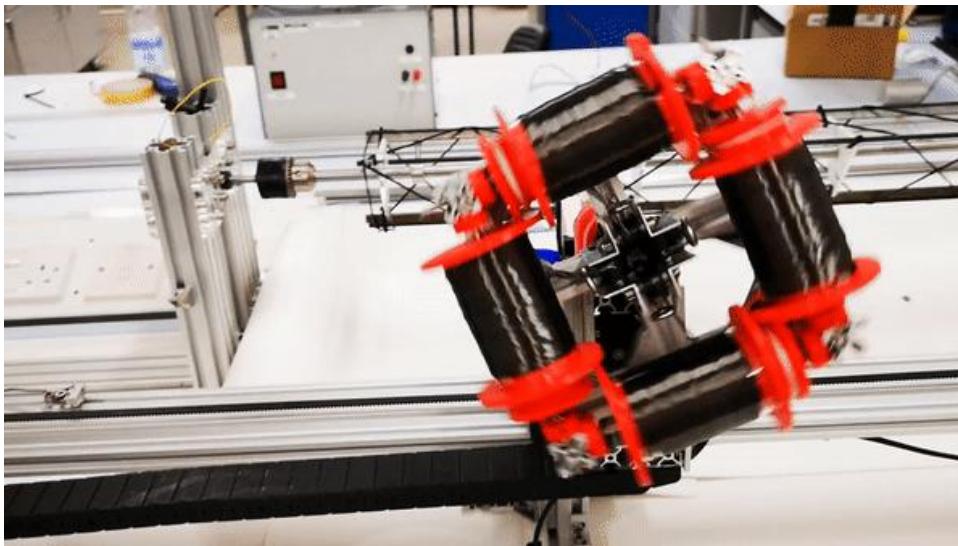
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(100) International Priority Date -

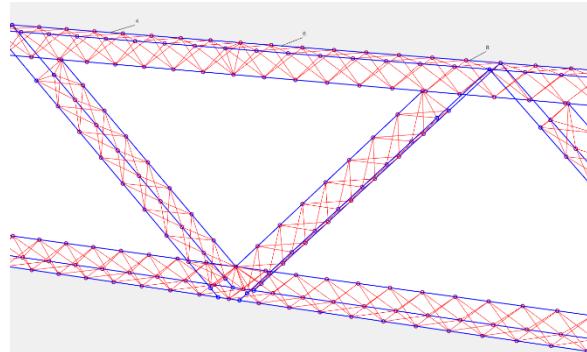
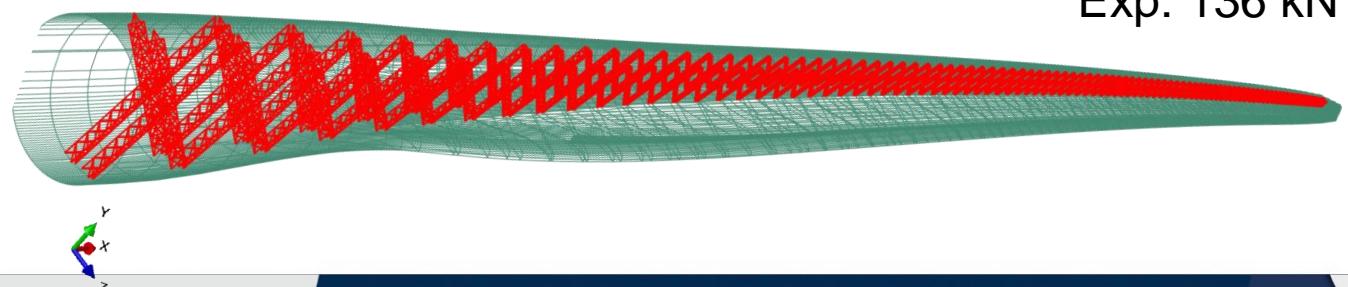
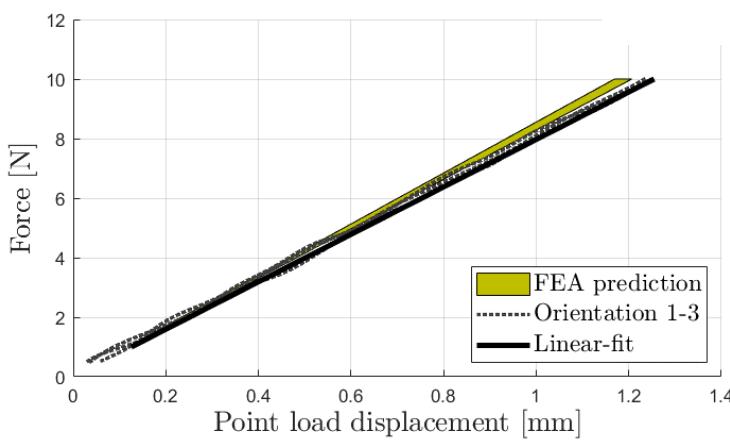
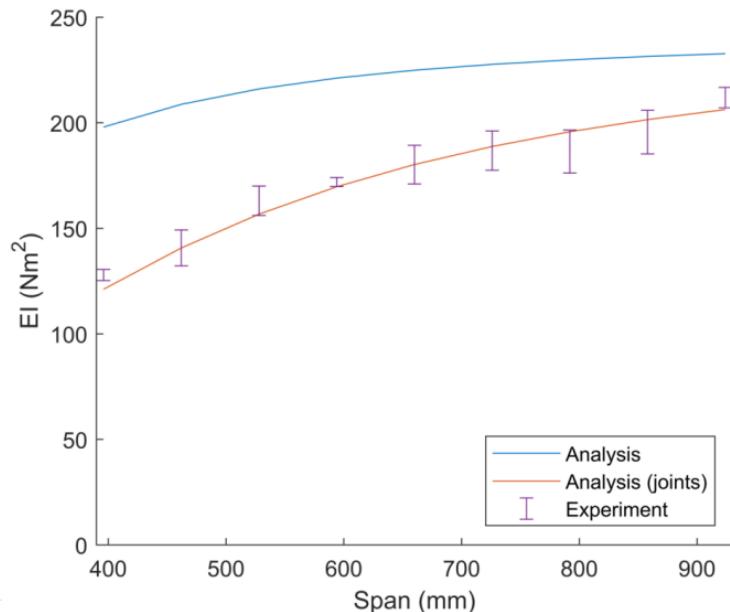
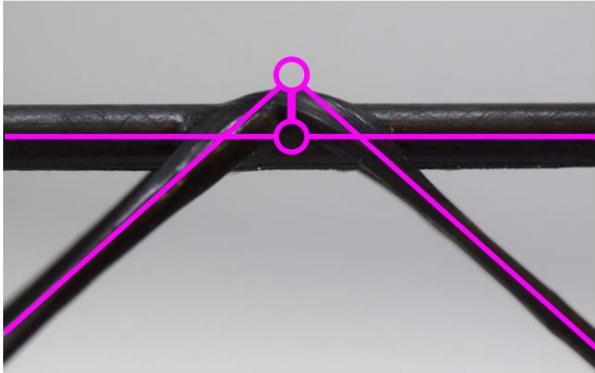
35 kg!



WrapToR Truss Beams – Manufacturing

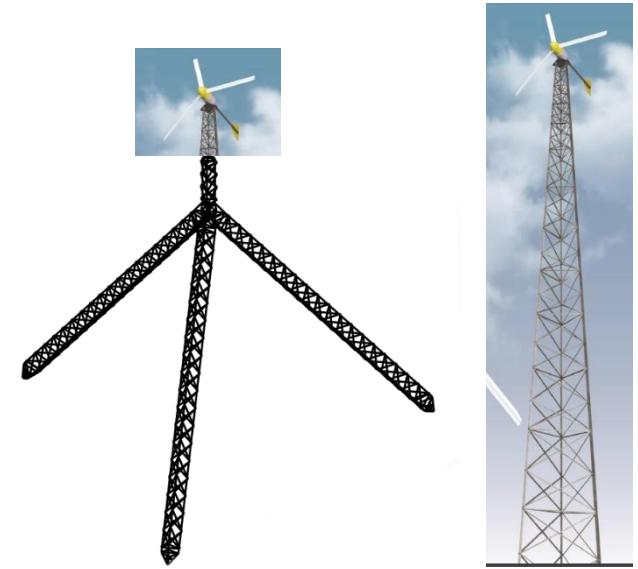
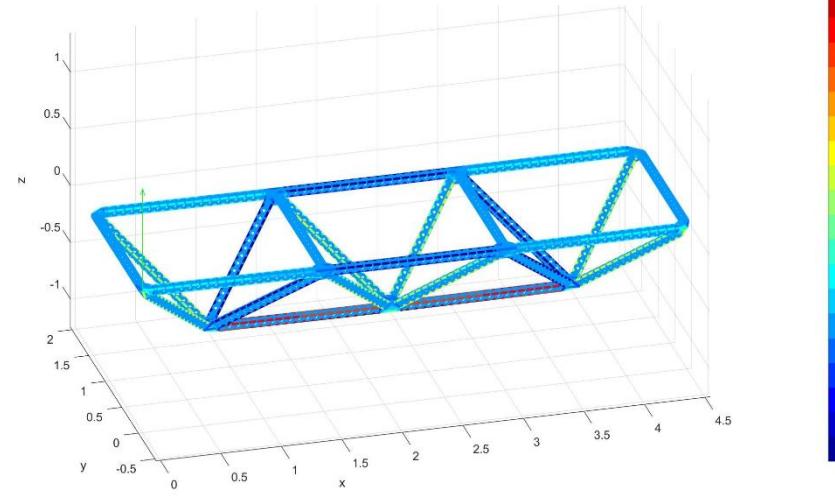
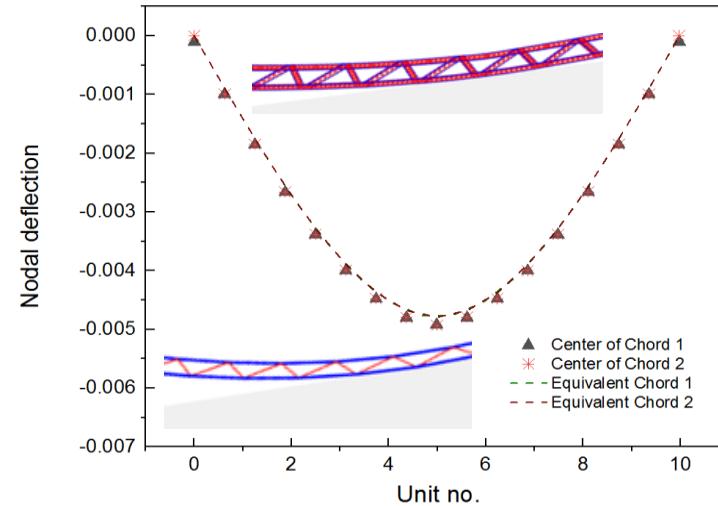
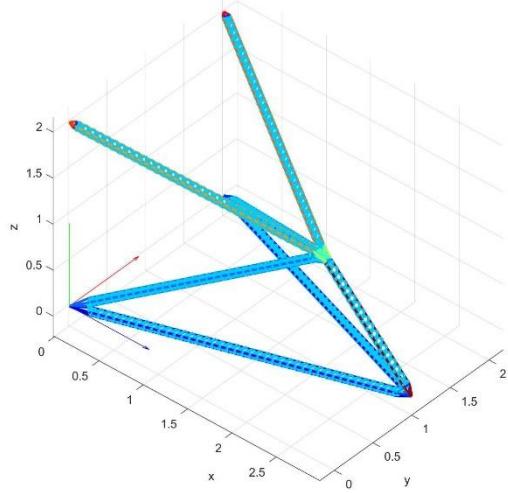


WrapToR Truss Analysis



FE: 131 kN
Exp: 136 kN

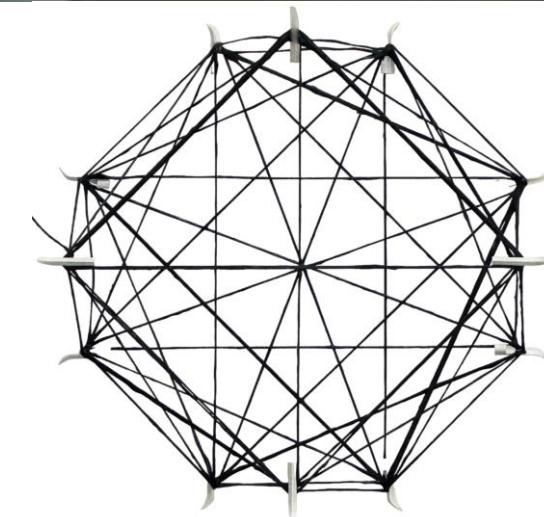
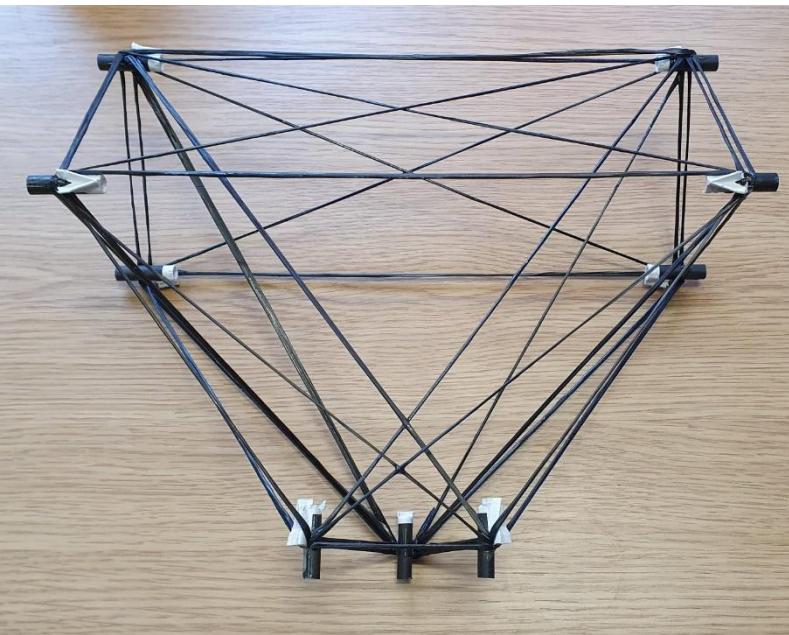
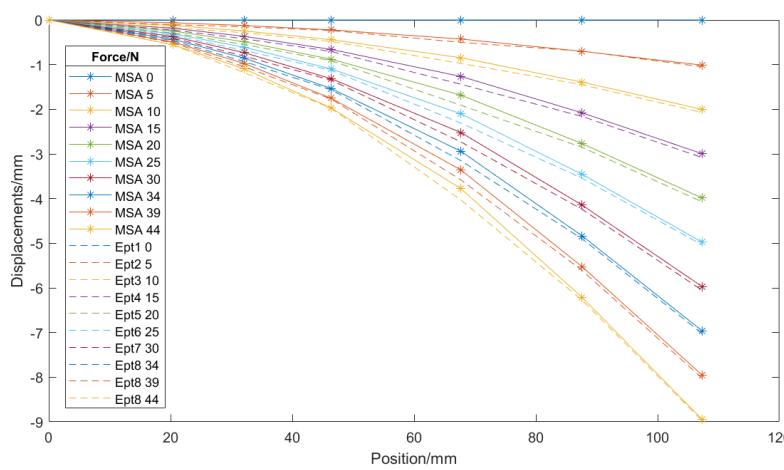
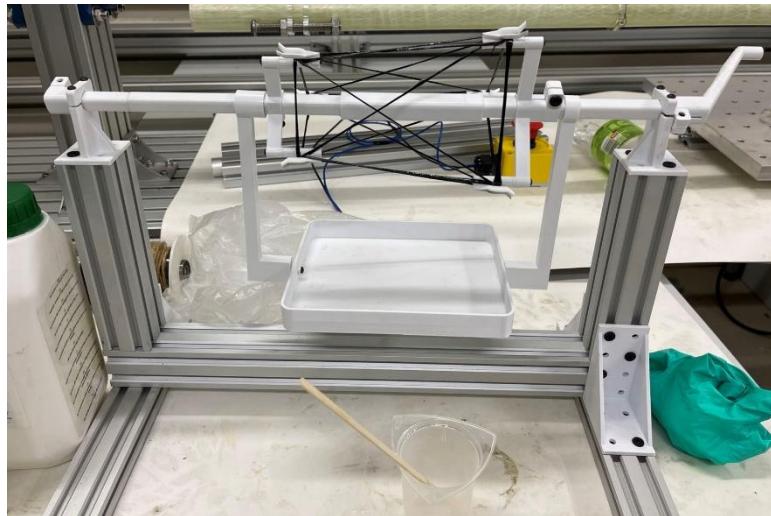
WrapToR Hierarchical Space Frames



Small wind tower case study
60% mass reduction

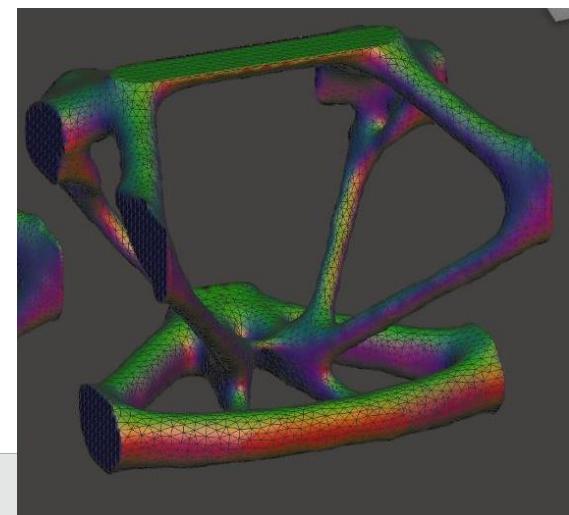
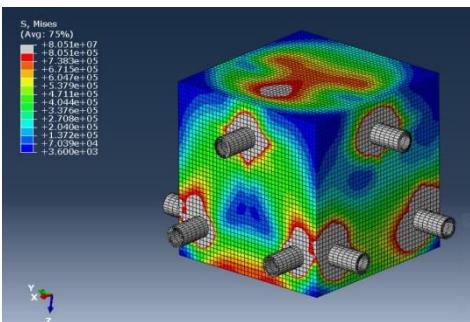
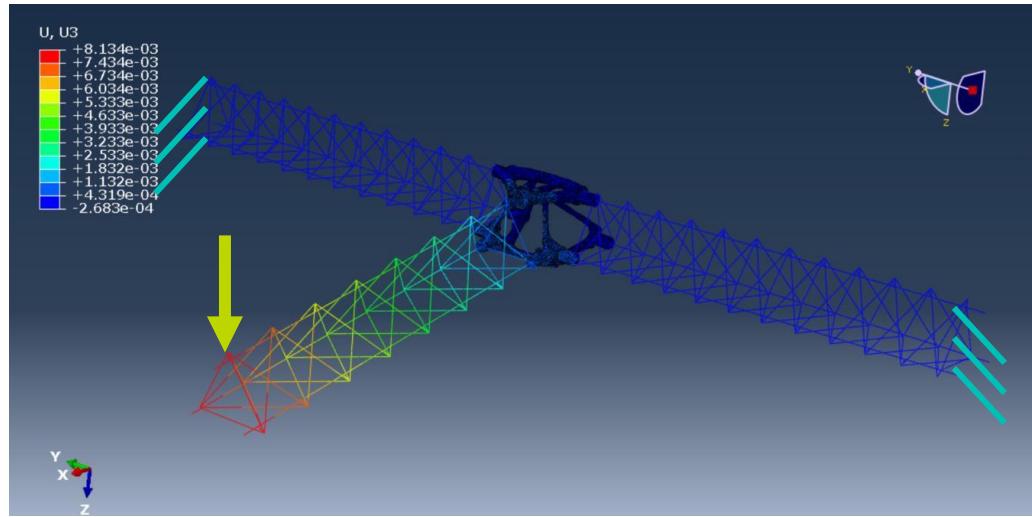


WrapToR Joints – Wound



Kyle Zhao

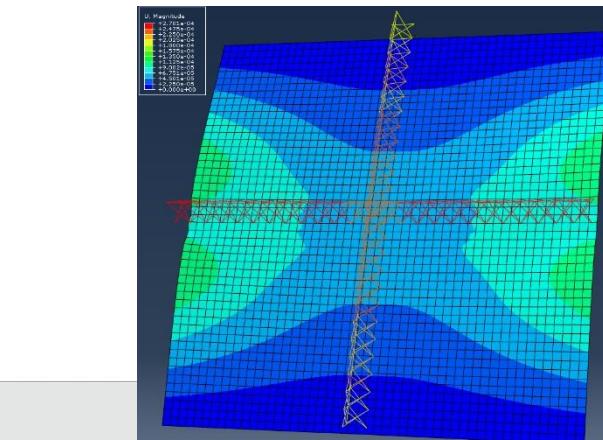
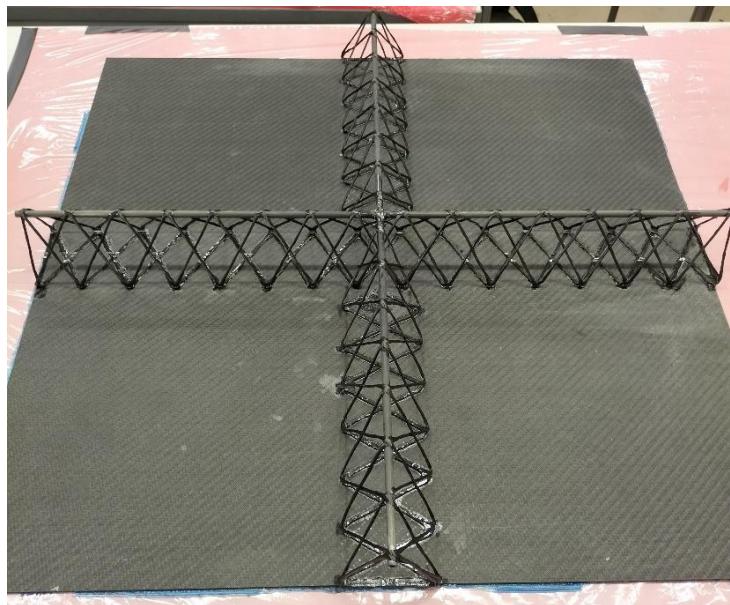
WrapToR Joints – Topology Optimised/Printed



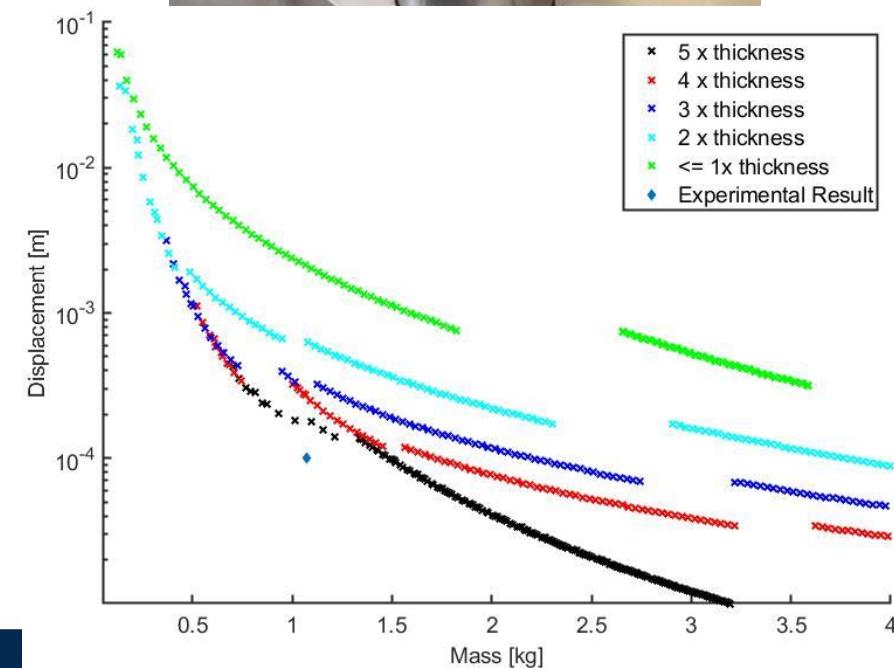
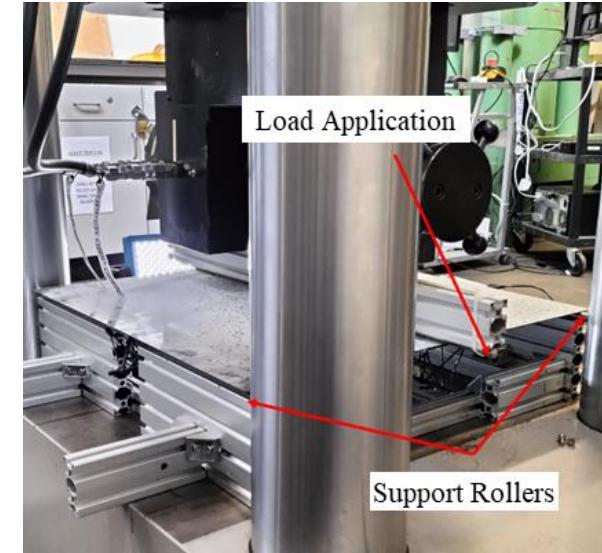
Matteo Ruggieri



WrapToR SHellS

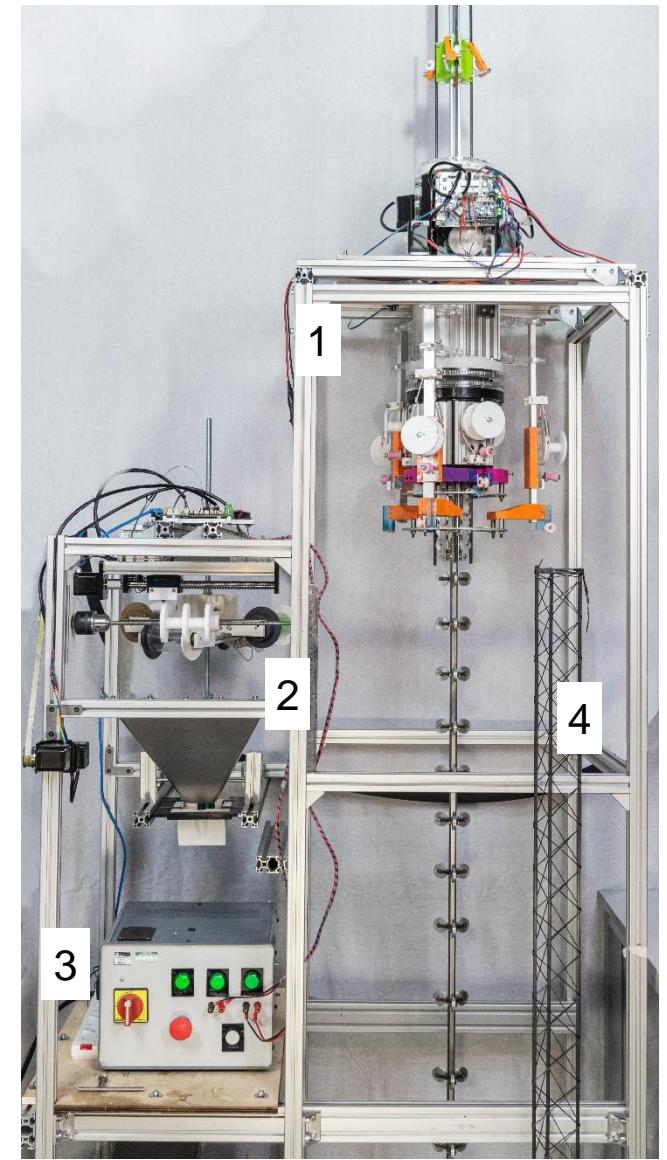
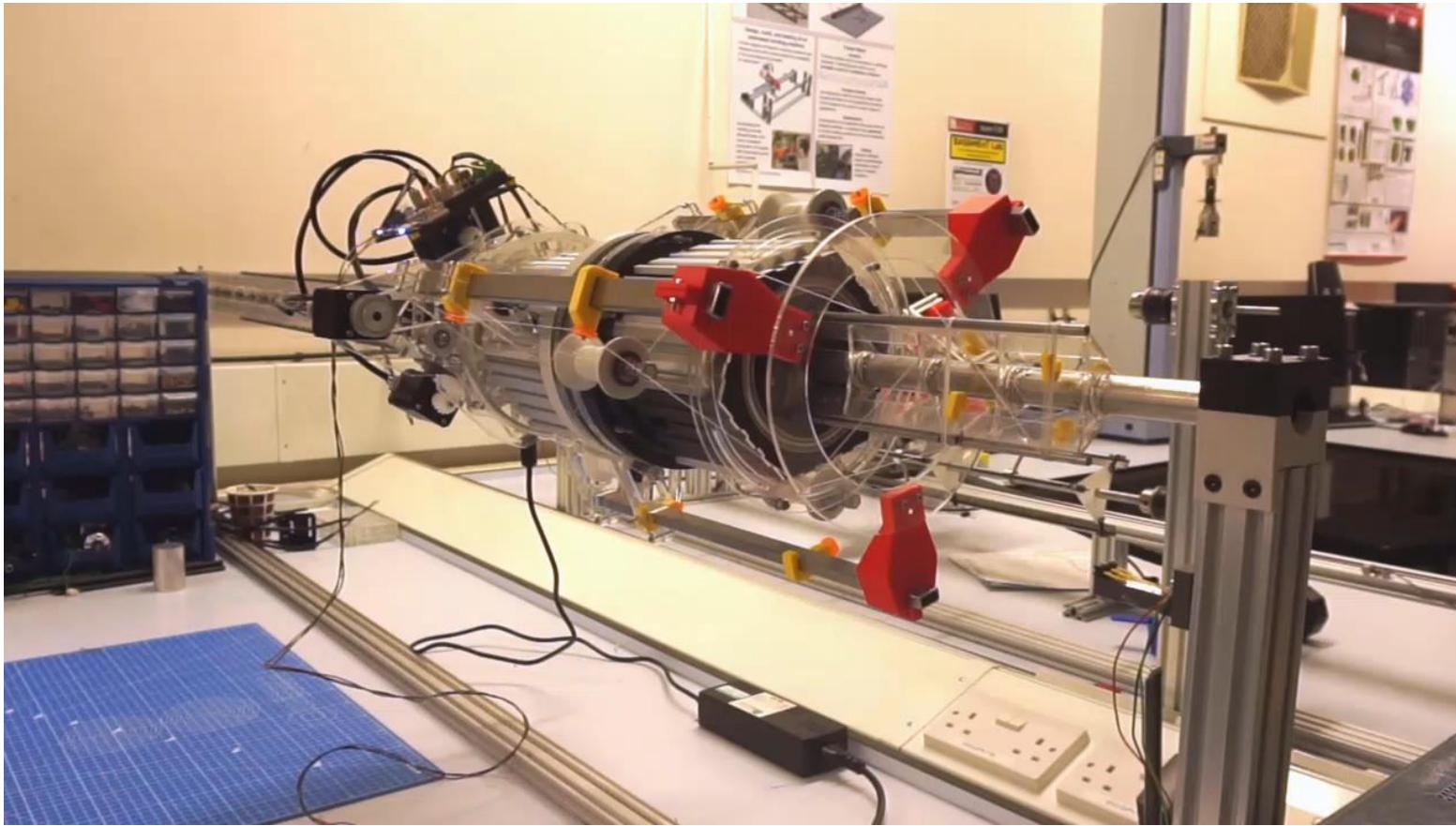


Chris Grace



Comparison to sandwich panels

WrapToR Trusstrusion



The future?

WRAPTOR 2049





Thanks for your
attention

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