

# Lamina Emergent Torsional (LET) Array for Origami-Inspired Mechanisms

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## Executive Statement:

A revolutionary invention that introduces a novel method for enabling folding or hinge-like movement in origami-inspired mechanisms, optimizing for space, weight, and volume.

## Technology Overview:

This technology, developed by Brigham Young University's Technology Transfer Office, features a lamina emergent torsional (LET) array made from composite materials. It is designed to act as a surrogate fold, providing a local reduction in stiffness to facilitate folding movements. This innovative approach aims to replace traditional pin joints in origami-based mechanisms, offering significant benefits for space applications by being lightweight, compact, and volume-efficient.

## Key Advantages:

- Enables extensive rotation during folding, minimizing weight, area, and volume
- Concealable joint beneath antenna panels, avoiding overlap with the effective center of rotation
- Supported by detailed technical analysis, including mathematical modeling for deflections and stresses
- Optimized for space applications, particularly beneficial for deployable antennas

## Problems Addressed:

- Reduces the need for traditional pin joints, overcoming limitations in weight, space, and complexity
- Improves the efficiency and compactness of folding mechanisms in space applications
- Addresses the challenge of integrating folding mechanisms without compromising on performance or volume

## Market Applications:

- Deployment mechanisms for space applications, such as satellites and spacecraft
- Folding phased array antennas for communication systems
- Origami-inspired mechanisms across aerospace, defense, and commercial sectors
- Potential licensing opportunities for companies specializing in deployable space structures