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Title: Development of composite carbon fibre coaxial contra-rotating UAV propeller blades with skewed geometry

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Abstract: Unmanned aerial vehicles (UAVs) have developed rapidly for a wide range of applications. For multi-rotor UAVs coaxial contra-rotating propellers can be employed due to their high thrust and small planform area but with the drawback of greater noise generation. In contrast to traditional straight blades, skewed propeller blades offer an advantage in noise reduction. Aeroelasticity can be significant even for traditional straight blades. Composite propeller blades in particular, although of high rigidity due to the stiffness of the material, may be subject to bend-twist coupling arising from their laminate lay-up. Additionally, a highly skewed blade planform is more likely to be susceptible to aeroelasticity due to the combined bending and twisting moments arising from the swept geometry. This presentation covers experimental and computational methods for determining the impact of aeroelasticity on the performance of composite rotor blades with skewed geometry.

All are welcome!