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IIST COLLOQUIUM

The longest known insect migration: Secrets that natural flyers hold for an Aerospace Engineer

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Abstract: *Pantala flavescens*, a dragonfly species, undertakes a remarkable multi-generational transoceanic migration spanning 14,000–18,000 km between India and Africa. Despite its small size, it can sustain 90 hours of flight at 4.5 m/s. Using Dijkstra's algorithm with energetic and wind compensation models, researchers mapped migration routes from 2002 to 2007, highlighting the crucial role of winds like the Somali Jet. Stopovers in Maldives and Seychelles are needed on the return trip. This study aligns with observational data and raises the broader question of whether natural flyers can inspire aerospace engineering, leading to insights in bioinspiration and biomimetics.



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Dr Sandeep Saha is an Associate Professor in the Department of Aerospace Engineering, IIT Kharagpur. He completed his PhD in Mechanical Engineering from Imperial College London. He subsequently held a position as a Marie Curie Experienced Researcher at CNRS (Laboratoire FAST), France. Following that, he worked with ALSTOM Power (now GE), UK; Schlumberger Gould Research, UK and the University of Duisburg-Essen, Germany. He has worked on a range of problems in fluid mechanics and in recent years has focused on Low Reynolds number Aerodynamics ranging a broad spectrum of problems like insect flight, extraterrestrial flight, respiratory flows and waste heat recovery and sports aerodynamics.



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