

Session organiser: Takeshisa YAIRI (Univ. Tokyo), Samir KHAN (Univ. Tokyo), and Seiji TSUTSUMI (JAXA)

Session title: New trends and challenges in aerospace PHM

Theme and objective:

Future PHM systems will continue to offer an essential role in the field of aerospace engineering for assessing safety conditions involving critical components, communications, avionics and structures. Many European countries and the USA have been promoting the development, maturing of PHM critical technologies and their applications in military and commercial aircrafts. Successful strategies will need to integrate real-time and reliable data acquisition, robust feature extraction from the acquired data, coherent statistical modelling of the features, and classification of the features to make seamless decisions. However, the challenge is unique, characterised by a limited labelled data, incomplete models, lack of explainability and cost of testing. A solution is to leverage machine learning models that can integrate with some physical knowledge to accelerate convergence, whilst producing actionable data. This organised session aims at stimulating discussions on current state-of-the-art developments, their challenges and future trends on emerging methods engineered for the PHM of Aerospace systems.

Potential in this theme but are not limited to:

- Multi-signal fusion-based PHM methods
- Multidimensional clustering and management for aerospace applications
- Physic- based learning methods
- Health management strategy design and optimization
- Automatic fault detection and diagnosis for complex dynamic systems

List of presenters:

TBD