

HUMAN SPACE ENDEAVOURS SYMPOSIUM (B3)
Space Station Utilization (3)

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FIVE YEARS OF UTILISATION
OF THE EUROPEAN PHYSIOLOGY MODULES FACILITY (EPM)

Abstract

The European Physiology Modules Facility (EPM) is one of the major research facilities of the ESA Columbus laboratory at the International Space Station (ISS). It consists of two separate parts: a complement of Science Modules and the Carrier Infrastructure. The Science Modules are specialized devices for specific experiments. The Carrier Infrastructure exists to provide mechanical accommodation, electrical power, datalinks and thermal control for the Science Modules. A defining characteristic of the EPM is its high modularity, which is made possible by standardized interfaces.

The EPM was commissioned in February 2008 after its successful launch with the Columbus laboratory. Since then, the EPM has been active during more than 100 sessions and has accumulated more than 600 hours of operation. During this time it has supported a total of 11 different experiments. Examples include Neurospat, Passages, Solo, Card and Flywheel. The EPM was initially dedicated to research of the effects of short and long duration space flight on the human body. However recently the research fields of the EPM have expanded to physics as well. This was possible due to the high modularity of the EPM.

This paper will describe the utilisation of the EPM over the past five years. A results outline from the operation of key experiments will be given. Furthermore the on-orbit maintenance actions that EPM underwent will be described.

Finally this paper will give an outlook of future EPM utilisation. The ongoing preparation process for future operations will be described. In the coming years the physics experiment Plasma-Kristall 4 (PK4) and the physiology experiment Dexterous shall be accommodated by the EPM. The PK4 experiment will research complex plasmas whereas the Dexterous experiment will research human motor control.