NASA SBIR 2005 Phase I Solicitation

X13.02  Behavioral Health and Performance

Lead Center: ARC

Behavioral Health and Performance provides the necessary technology, techniques, capabilities, and knowledge that will support mission success, during human exploration flight and return to Earth. This will be accomplished by optimizing the behavioral health and performance of each astronaut and crewmember, and by mitigating psychosocial, neurobehavioral, sensorimotor, cognitive, and sleep chronobiology risks. Behavioral health and performance research contributes to medical standards, guidelines, and requirements and produces design tools and diagnostic measures for the Chief Health and Medical Officer, flight surgeons, and astronauts. The technical areas supported by this program include performance readiness, effective and efficient teamwork for pre-, in-, and post-flight expedition missions, and psychological selection validated criteria, tools, and procedures. Prolonged missions and the associated adaptation and de-conditioning due to microgravity, as well as significant time delays between Earth and the space environment increase the likelihood of serious crew conflict as well as behavioral health and performance decrements. Proposals are solicited that seek to develop core knowledge, predictive models, and enabling technologies that address these specific needs:

- Non-intrusively monitoring and maintaining human performance. Specifically, minimally invasive and unobtrusive devices and techniques to monitor the behavior and performance (physical, cognitive, perceptual, sensorimotor, etc.) of individuals and teams during long-duration space flights or analog missions. Embedded measures to detect significant changes in crew readiness to perform physical or cognitive tasks; and
- Monitoring and maintaining non-intrusively behavioral health. For example, self assessment tools for determining levels of stress, fatigue, conflict, and anxiety of an individual crewmember and training techniques for coping and on-board support tools for behavioral health.