

SPACE LIFE SCIENCES SYMPOSIUM (A1)  
Medical Care for Humans in Space (3)

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REMOTE ECHOGRAPHY AND DOPPLER IN ISOLATED ENVIRONMENT USING A  
TELE-OPERATED ULTRASOUND SYSTEM AND MOTORIZED PROBE TRANSDUCER.  
APPLICATION TO SPACE EXPLORATION AND ISOLATED MEDICAL CENTRE.**Abstract**

The objective was to design an integrated ultrasound system equipped with motorized probe which could be fully tele-operated by a sonographer far away from his patient. The system is composed of two work stations connected via internet network. The sonographer uses the "expert work station" (conventional laptop) for a remote control of functions of a commercial ultrasound system (gain, depth, freeze, PW colour Doppler, 3D capture, measures..) heart of the "patient work station". A tele-operated ultrasound probe is used; the two engines inside the probe allow tilting and rotating the transducer from away according to movements of expert sonographer hand applied on a dummy probe. A non-sonographer person, by the side of the patient, locates the motorized probe on the patient, on top of the acoustic window of the organ as indicated by the expert via videoconference, existing between the expert and patient work stations. Then the expert controls the orientation of the transducer, until he gets the appropriate view of the organ. He also adjusts the image displayed (Gain, depth..) and activates at his convenience the different functions (PW or Colour Doppler, TM, 3D, measures...) using the laptop keyboard of the expert work station. At last he captures images or video directly on his computer. The hardware is on board ISS and will be used during Thomas Pesquet mission beginning of 2017.