This work discuss the project and the real time simulation of the Attitude Control Systems-ACS of satellites with geomagnetic attitude control. It has the first Brazilian Scientific Applications Satellite-SACI1 as application, that will have an autonomous attitude control and will be spin-stabilized with active spin rate and precession control through magnetic torque coil interactions with the geomagnetic field. The work: 1) shows how to use system integrated development tools such MATRIXX or MATLAB; 2) shows the mathematical model development with the system dynamics and the controller project and analysis; 3) shows the system closed loop real time simulation process through language C software codification, and 4) shows the simulations done so far.

Keywords: *Simulation/Simulação, Tempo Real/Real Time, Controle de Atitude/Attitude Control*

COB1342 UTILIZANDO O MATLAB PARA O CONTROLE DE UM SIMU-LADOR DINÂMICO EM TRÊS EIXOS/ *USING MATLAB TO CONTROL A THREE AXIS DYNAMIC SIMULATOR*

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This work presents the description of an interface software between MATLAB and a three axis dynamic simulator Contraves 53M2-30H. The host computer is an IBM-PC which communicates with the simulator by means of a dedicated interface specially built for this purpose. A software writen in C enables to command the simulator exactly in the same way as if it the command keyboard of the simulator controller were used. An aditional set of routines that are not built in the simulator controller like multiple rate or position reads was also developed. Based on both sets of routines it was developed an interface software with MATLAB that enables the user to access all the control functions of the simulator directly from the analysis environment of that software.

Keywords: *Real Time, Interactive Software, Attitude Control, Physical Simulation, Hardware in the Loop Tempo real, Software Interativo, Controle de Atitude, Simulação Física, Hardware em malha*

COB1492 MODELAGEM, SIMULAÇÃO E RESULTADOS DE UM EXPERIMEN-TO DE CONTROLE DE UMA UNIDADE TÉRMICA/*MODELING, SIMU-LATION AND RESULTS FOR A THERMAL UNITY CONTROL EXPERIMENT*

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This work shows the development of an experiment implemented at a Control Systems Laboratory focusing Mechanical Engineering students. The objetives to be achivied with this equipment

are to reinforce the importance of good dynamic models and to point out the limitations of the control system design in the absence of a compatible dynamic model. The thermal unit is an aluminum box with removable internal chicanes to modify internal air flow, and covered by an acrilic window, where, trough the use of heaters and a small fan,internal prescribed temperatures must be maintained at given levels. As the thermal unit has a distributed parameter system behavior, lumped parameter models allow just mean temperature control very far from the control objective. The paper begins calling attention to the question of control education for Mechanical engineers, shows the design and simulated and experimental control results achieved with lumped parameter models to describe the thermal unity behavior and analyes modifications to be introduced in the experiment in order to get more realistic results.

Keywords: *Control systems, Thermal control Systems, Laboratory experiments, Mechanical Engineering Education*