Cavity Simulator for European Spallation Source

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**ABSTRACT**

European Spallation Source will be the brightest neutron source in the world. It is being built in Lund, Sweden. Over 300 researchers and engineers will be involved in the construction. The purpose of the facility is to produce intense beams of neutrons for use in materials science, physics, and life sciences. The system is designed to operate at a steady state, ensuring high efficiency and reliability. The design features advanced cooling and safety systems to ensure the facility's long-term operation.

**MODEL**

The model consists of several key components: magnet, detector, and control system. The magnet generates a strong magnetic field necessary for the operation of the system. The detector collects and analyzes the data from the neutron beams. The control system ensures the smooth operation of the facility, adjusting parameters as needed.

**HARDWARE**

The hardware includes a high-speed data acquisition system, signal processing units, and power distribution systems. It is designed to handle the high energy and power levels associated with the facility.

**FIRMWARE**

The firmware manages the communication between hardware components, ensuring efficient data transfer and system monitoring.

**PHOTO**

A photograph of the facility under construction is shown, highlighting the scale and complexity of the project.

**TRANSMISSION**

A graph illustrates the transmission characteristics of the facility, showing how the neutron beams are directed and controlled.

**GROUP DELAY**

A graph shows the group delay and how it affects the transmission of the neutron beams.

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