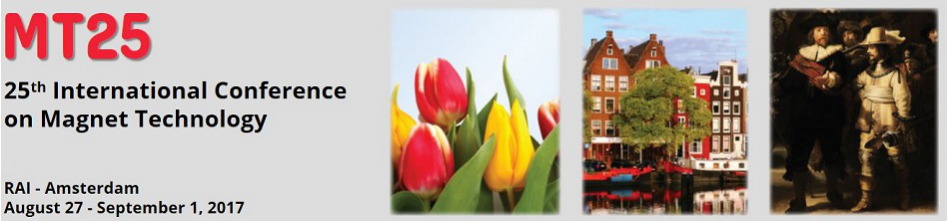

Contribution ID: **861** Type: **Poster Presentation of 1h45m**

OPTIMIZATION, DESIGN AND OPERATION ASSESSMENT OF A MULTIPURPOSE DETECTOR FOR NICA COLLIDER

Monday, 28 August 2017 13:15 (1h 45m)

Nuclotron-based Ion Collider state-of-art design involves innovative solutions in superconductive applied technology. Thanks to its consolidated experience, ASG has been directly involved into the program by providing to Joint Institute for Nuclear Research (JINR) a large 0.5 T Nb-Ti superconductive magnet equipped with an active (resistive) modulation system. Typical solutions have been specifically optimized in order to guarantee the maximum flexibility in all operative conditions. ASG has been involved in the whole design of magnetic, structural, thermal and protection systems. Magnetic configurations meeting optimized field requirements have been identified also accounting in detail the expected significant technological deviations. The two resistive coils, forming the active modulation system, principally perform the identification of the optimized magnetic configurations. Lorentz forces and coil interactions produced by the system have been calculated in order to verify mechanical structure and stresses on the coils. The protection system of the magnet in case of quench has been designed in order to minimize thermal stresses on the cold mass components. The electromagnetic interactions between components, during dynamic events, have been evaluated in order to verify the cryogenic and structural stability of the system. Manufacturing phase is ready to start. Main results will be presented to illustrate the adopted process and technological solutions.

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