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Design and Construction of Versatile Experiment Spherical Torus (VEST) at Seoul National University YOUNGHWA AN, KYOUNG-JAE CHUNG, BONGKI JUNG, HYUNYEONG LEE, CHOONGKI SUNG, HYUN-SEOK KIM, YONG-SU NA, YONG-SEOK HWANG, Seoul National University
— A new spherical torus, named as VEST (Versatile Experiment Spherical Torus), has been built at Seoul National University to investigate versatile research topics such as double null merging start-up, divertor engineering and non-inductive current drive. VEST is characterized by two partial solenoid coils installed at both vertical ends of a center stack, which will be used for double null merging start-up schemes. A poloidal field (PF) coil system including the partial solenoids for break-down and a long solenoid for the sustainment of merged plasma has been designed by solving circuit equations for the PF coils and vacuum vessel elements in consideration of required volt-second, null configuration and eddy current. To supply required currents to the PF coils and solenoids, power supplies based on double-swing circuit have been designed and fabricated with capacitor banks and thyristor switch assemblies. Also a power supply utilizing cost-effective commercial batteries has been developed for toroidal field(TF) coils. Detailed descriptions on the design of VEST and some initial test results will be presented.

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