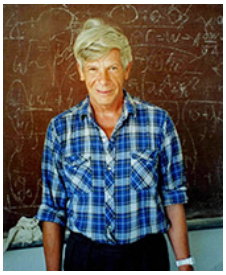

Contribution ID: **33** Type: **Session Talk**

Thermodynamics and Phase Transition of the Schwarzschild Black Hole in Anti-de Sitter-Beltrami spacetime.

Thursday, 13 October 2022 15:20 (25 minutes)

We describe thermodynamics properties and Hawking-Page phase transition of the Schwarzschild black hole in the Anti-de Sitter-Beltrami (SAdSB) spacetime.
We discuss the Beltrami or inertial coordinates of the Anti-de Sitter(AdS) spacetime. Transformation between the non-inertial and inertial coordinates of the AdS spacetime is introduced to construct the solution of spherical gravitating mass and other physical quantities. The Killing vector is determined to calculate the event horizon radius of this black hole. The entropy and the temperature of SAdSB black hole are determined by the Noether charge method. The Smarr relation and first law of black hole thermodynamics for the SAdSB spacetime have been formulated. The Gibbs free energy and heat capacity of this black hole is calculated and the first-order phase transition between small and large black holes is also discussed. The second-order phase transition between the thermal AdS and the large black hole is also investigated and the Hawking-Page temperature is computed and compared with the case of the Schwarzschild-Anti-de Sitter(SAdS) black hole.

Primary authors: ANGSACHON, Tosaporn (Division of Physics, Faculty of Science and Technology, Thammasat University); Mr RUENEAROM, Krekpon

Presenter: ANGSACHON, Tosaporn (Division of Physics, Faculty of Science and Technology, Thammasat University)

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