RCNP, OSAKA UNIVERSITY
NUCLEAR PHYSICS
THEORY SEMINAR

Title	Color confinement due to violation of non-Abelian Bianchi identity
Speaker	Tsuneo Suzuki, Kanazawa University
Date and Time	MAR 9th (Fri) in 2018 13:30
Place	Lecture room 2 on the 6th floor of RCNP main building

Abstract:
A new scheme for color confinement in QCD due to violation of the non-Abelian Bianchi identities is proposed. The violation of the non-Abelian Bianchi identities (VNABI) J_{μ} is equal to Abelian-like monopole currents k_{μ} defined by the violation of the Abelian-like Bianchi identities. If the color invariant eigenvalues of VNABI condense in the QCD vacuum, non-Abelian color confinement is realized. This confinement picture is completely new in comparison with the previously studied monopole confinement scenario based on an Abelian projection after some partial gauge-fixing. To check if the new scenario is realized in nature, numerical studies are done in the framework of lattice field theory by adopting pure SU(2) gauge theory for simplicity. Monopole dominance and Abelian dual Meissner effect due to VNABI are observed clearly. The density of lattice VNABI and the infrared effective monopole action are studied with the help of the blockspin renoramlization group. Both density and infrared effective action show beautiful scaling behaviors expected in the continuum limit. These numerical results strongly support the new confinement scenario.

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