

Abstract Submitted  
for the APR13 Meeting of  
The American Physical Society

**E.Cartan's Spinor and the infrared QCD** SADATAKA FURUI,  
Teikyo University — In 'The Theory of Spinor (Dover 1966)' of Eric Cartan, 8 spinors possessing odd number of indices, 8 spinors possessing even number of indices, 4 vectors  $X$  and  $X'$  make trilinear form  $F = \varphi CX\psi$  which is invariant under super symmetric transformations  $G(23), G(12), G(13), G(123)$  and  $G(132)$ . Since mixing of spinors and vectors occur by these transformations except  $G(23)$ , the electromagnetic(EM) wave emitted from the transformed world would be undetectable in our detector, and they would appear as dark matter. One of the 2-component spinors transformed by  $G(23)$  is the complex conjugate of the original, and the main part would be undetectable. There is an observation that the mass ratio of the dark matter to normal matter is almost exactly 5:1. I assume that the vertex of vector particle coupling to quarks and coupling to leptons have qualitative differences, i.e. EM interaction of a lepton is sensitive to the triality but that of a quark is blind. Roles of triality in the infrared QCD, in the axial vector anomaly, in the astrophysical observations, and a conjecture on making neutrino massive through triality without invoking right-handed neutrinos will be discussed.

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Date submitted: 26 Dec 2012

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