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Causal symplectic geodesic structures in terms of bilinear functionals for Haag- Araki theory

In this paper, a proof of the theorem on the global hyperbolicity of space-time M on the sphere S^4 is proposed based on the topology of open light cones; the work uses the so-called concrete approach to the construction of the Haag-Araki axiomatics.
The properties of causal geodesic structures on the paracompact complement of space-time are investigated.1. A description of quasi-equivalent sectors has been created within the framework of super selection rules\\
2. It is proven that each layer on a star-shaped surface is a projective limit for a tubular region in axiomatic field theory on a factor space\\
3. It is proved that the temporal ordering operator of the causal geodesic structure in the symplectic case

1. The advantages from the point of view of physical motivation for choosing the criterion of extended isotonia are indicated \\
2. A superstructure on the Bowen-Waters ultrametrics has been introduced in relation to axylmatic quantum field theory.\\
3. A new proof of the generalized Cook's criterion for ω_o states of the system has been found, based on the SEM (condition for positive energy on the symplectic layer).
4. It is shown that the Markovian time ordering operator $T^*_{\omega\lambda}$ has a closed spectrum The author has proven the following theorem Let there be a pseudo-Riemannian metric E with signature $(+,-,+-)$ in class C^p on which there is an isomorphism defining an almost complex structure (E,σ) with gauge function σ, which defines a family of symplectic forms of the form $d\lambda^n$. This theorem can be reformulated like this:\par\textit{A symplectic structure based on the 1-form $d\sigma$ in the class C^p has a contractible fiber . For this purpose, an auxiliary lemma was proved. \\ \textit{Lemma 1. $\exists$ at least 1 vector $v^a_b \perp TM$ non-orthogonal to the timelike surface } In order to find an object suitable for proving Lemma 1, it is necessary to prove the following theorem \begin{theorem} The paracompact complement of spacetime $\grave{M}$ is a non-extensible globally hyperbolically complete spacetime

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