

New Way of Interpretation about Spacetime through Macro and Micro Region

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In macro region, general Relativity regards spacetime as gravitational field and structural interpretations of spacetime are very broad. This enables us to put off ultimately determining whether spacetime is actually “substance” or “relation” of other entities, especially about two topics of what represents spacetime and where it is. Structural realism about spacetime is so ambiguous that we need to consider at first the meaning of realism. For example, a question is “in which realm can we claim spacetime exists?”. That is to say, we must consider which realm this may be directly, a physical world or another such as an abstract world. Structural realism is holding many problems in the context of philosophy of science, whether it is an epistemic version or ontological one. For spacetime ontology, spacetime points get their identities only from metric relationally and they don't have intrinsic property, nor haecceity, which is called moderate structural realism (Esfeld and Lam 2006). This standpoint bases structures of spacetime on a physical concrete world. However, Slowik says that structural realism about spacetime is related even with the problem of universals because ontology structural realism claims goes beyond the context of physical realism (2006 2015). These structures featured by geometrical properties of spacetime are described mathematically and now that we deal with spacetime itself, we are to be asked once more where spacetime exists. To this question, the difference between concrete and abstract worlds is very vague since spacetime can't be located in spacetime itself and the problem has occurred whether spacetime is a concrete (instantiated) entity or not. Armstrong proposes instantiated spacetime is not outside spacetime as immanent realism even though it can't be located there (1988). He says the structure itself may be universal involving instantiated physical spacetime. On the other hand, nominalism about spacetime is possible and I want to argue for truth-value nominalism regarding structural realism about spacetime (Slowik 2015). This standpoint is a moderate version between pure realism and nominalism and it can accept both physical and mathematical aspects of contemporary scientific theories, which connects scientific realism with metaphysical realism (Psillos 2010-2012). I want to justify spacetime world is not the only concrete or physical world and even some of abstract entities are included as a physical world. I think these ambiguities of spacetime ontology and other scientific theoretical entities make the distinction between universals and particulars no longer important. In fact, quantum theory of gravity doesn't presuppose spacetime because in micro region, there are more fundamental entities than spacetime and spacetime just emerges from these entities. This means contemporary physics admits no spacetime worlds as physical worlds, not mere mathematical models. I am willing to reconcile philosophical arguments about emergence of spacetime (Wuthrich 2018) with the above picture of structural interpretations and suggest a new perspective.