

# A NO-GO THEOREM ON THE NATURE OF THE GRAVITATIONAL FIELD BEYOND QUANTUM THEORY

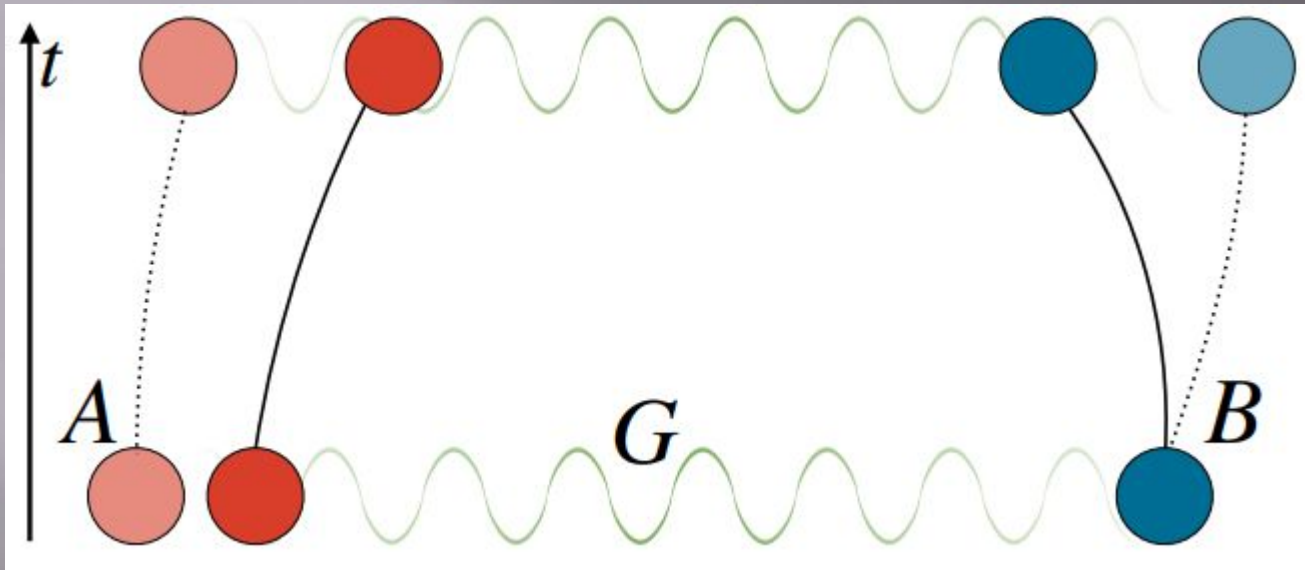
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# Plan

- Introduction
- Theory independent framework.  
The concept of GPT
- Theorem.
- Discussion of conditions
- Conclusion

# Illustration of the experimental situation.



Two masses  $A$  and  $B$  are initially prepared in a separable state.

The masses interact via the gravitational field  $G$ . After some time, the full state becomes entangled.

# Theorem

- ▣ We consider two non-classical systems  $A$  and  $B$ , initially in a separable state, and some unknown field  $G$ . If, after some time  $t$ , entanglement between the systems  $A$  and  $B$  is observed, then the following statements are incompatible:
  1. Subsystem independence of  $A$  and  $B$ ;
  2.  $A$  and  $B$  interact locally via the mediator  $G$ ;
  3.  $G$  is classical

# Conclusion

- ▣ -Introduce the concept of GPT(General Probabilistic Theories)
- ▣ -Formulated the theorem about entanglement of two non-classical systems
- ▣ - Have pointed out the existence of post quantum systems