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Testing the equivalence principle on cosmological scales

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The weak equivalence principle is one of the cornerstone of general relativity. Its validity has been tested with impressive precision in the Solar System, with experiments involving baryonic matter and light. However, on cosmological scales and when dark matter is concerned, the validity of this principle is still unknown. In this talk I will show how relativistic effects in the large-scale structure can be used to test whether dark matter obeys the weak equivalence principle. I will present forecasts for this new test of gravity for future surveys like DESI and the SKA, showing that deviations from the equivalence principle can be constrained with a precision of order 10 percent.

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