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On Constraining the $R_h=ct$ Universe with RSD and OHD Measurements

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We present new constraints on the $R_h = ct$ cosmological model derived from redshift space distortion (RSD) data. In contrast to the standard Λ CDM framework, the $R_h = ct$ universe imposes a linear expansion and enforces the condition $R_h = ct$ at all cosmic times, leading to distinct predictions for the growth rate of cosmic structure. Using a comprehensive sample of RSD measurements across a broad range of redshifts, we test the $R_h = ct$ model's viability as an alternative to Λ CDM by comparing its predictions against observation through statistical inference. Our analysis demonstrates that the $R_h = ct$ universe fails to provide an adequate description of the growth history, yielding a significantly poorer fit than Λ CDM under standard likelihood analyses. These results highlight the strong constraining power of RSD data and reinforce the conclusion that the $R_h = ct$ model cannot account for the observed dynamics of large-scale structure formation.

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