

# Quasar variability limits on cosmological density of cosmic strings

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(Submitted on 26 Jan 2010 (v1), last revised 24 Feb 2010 (this version, v2))

We put robust upper limits on the average cosmological density  $\Omega_s$  of cosmic strings based on the variability properties of a large homogeneous sample of SDSS quasars. We search for an excess of characteristic variations of quasar brightness that are associated with string lensing and use the observed distribution of this variation to constrain the density of strings. The limits obtained do not invoke any clustering of strings, apply to both open segments and closed loops of strings, usefully extend over a wide range of tensions  $10^{-13} < G\mu/c^2 < 10^{-9}$  and reach down the level of  $\Omega_s=0.01$  and below. Further progress in this direction will depend on better understanding of quasar intrinsic variability rather than a mere increase in the volume of data.

Comments: 7 pages, 2 figures, accepted to Phys.Rev.D, no essential changes from v1. Based on the referee's feedback, a paragraph is added that emphasizes the value of the obtained limits to constrain the abundance and reconnection probabilities of fundamental (rather than topological) strings

Subjects: **Cosmology and Extragalactic Astrophysics (astro-ph.CO)**; General Relativity and Quantum Cosmology (gr-qc); High Energy Physics - Phenomenology (hep-ph)

Cite as: [arXiv:1001.4580v2](#) [astro-ph.CO]

## Submission history

From: Artem Tuntsov [[view email](#)]

[v1] Tue, 26 Jan 2010 02:06:12 GMT (27kb)

[v2] Wed, 24 Feb 2010 11:49:23 GMT (31kb)

*Which authors of this paper are endorsers?*