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Where are the baryons?

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In the local Universe, about half of the total baryon content of the Universe is still escaping our census. Understanding the state and distribution of these missing baryons is a major question for our knowledge of galaxy evolution and cosmology. Numerical simulations predict that the missing baryons should be in the form of a very diffuse, warm-hot (T˜1e5-1e7 K) state, which would remain largely undetected both inside dark-matter halos and in the filaments of the cosmic web. I will present recent results on the hunt for the missing baryons. First, I will present a combined X-ray and gravitational lensing study of filaments in the outskirts of a massive galaxy cluster, which unveil the baryon content of intergalactic filaments. I will also show the results of systematic studies of the global baryon budget of massive halos in the XXL and CFHTLS surveys. These measurements will be combined to update our knowledge of the Universe's missing baryons.

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