

The identity of the fundamental broken symmetry (if any) in the underdoped cuprates is unresolved. However, evidence has been accumulating that this state may be an unconventional density wave. Here we carry out site-specific measurements within each CuO_2 unit cell, segregating the results into three separate electronic structure images containing only the Cu sites $[\text{Cu}(r)]$ and only the x/y axis O sites $[\text{O}_x(r)$ and $\text{O}_y(r)]$. Phase-resolved Fourier analysis reveals directly that the modulations in the $\text{O}_x(r)$ and $\text{O}_y(r)$ sublattice images consistently exhibit a relative phase of π . We confirm this discovery on two highly distinct cuprate compounds, ruling out tunnel matrix-element and materials-specific systematics. These observations demonstrate by direct sublattice phase-resolved visualization that the density wave found in underdoped cuprates consists of modulations of the intraunit-cell states that exhibit a predominantly d -symmetry form factor.