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Catalogue with visual morphological classification of 32,616 radio galaxies with optical hosts

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We present the catalogue of RadiO sources with Galactic counterparts and Unresolved or Extended morphologies I (ROGUE I), which is the largest handmade catalogue of visually classified radio objects and optical galaxies. It was created by cross-matching galaxies from the Sloan Digital Sky Survey Data Release 7 as well as radio sources from the First Images of Radio Sky at Twenty Centimetre and the National Radio Astronomical Observatory VLA Sky Survey catalogues. ROGUE I contains 32,616 galaxies with a FIRST core within 3", of the optical position. The results of our classification procedure are:

- the majority of radio sources in the ROGUE I catalogue, i.e. ~93%, have unresolved (compact or elongated) morphologies, while the rest of them exhibit extended morphologies, such as Fanaroff-Riley type I, II, and hybrid, wide-angle tail, narrow-angle tail, head-tail sources, and sources with intermittent or reoriented jet activity, i.e. double-double, X-shaped, and Z-shaped,
- most of the Fanaroff-Riley II radio sources in ROGUE I have low radio luminosities, comparable to the luminosities of Fanaroff-Riley I sources,
- our selection procedure allowed to discover or reclassify a number of objects as giant, double-double, X-shaped, and Z-shaped radio sources,
- the optical host galaxies in ROGUE I have elliptical (~64%), spiral (~16%), distorted (~12%), and lenticular (~7%) morphologies; the remaining ~1% are ring galaxies and galaxy mergers.

The presented sample can serve as a database for training automatic methods of identification and classification of optical galaxies and radio sources.

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Session Classification: A historical perspective of the Third Cambridge catalogue