http://doi.org/10.69646/14sbac12a

SAMPLE OF COMPACT EXTRAGALACTIC RADIO SOURCES BY CROSS-MATCHING THE GAIA AND VLASS CATALOGS

NESTOR ARSENOV[1], SANDOR FREY[2,4], ANDRAS KOVACS[2,3], LYUBA SLAVCHEVA-MIHOVA[1]

[1]*Institute of Astronomy and NAO, Bulgarian Academy of Sciences, 72 Tsarigradsko Chaussee Blvd., 1784 Sofia, Bulgaria*
[2]*Konkoly Observatory, HUN-REN Research Centre for Astronomy and Earth Sciences, Konkoly Thege Miklos ut 15-17, H-1121 Budapest, Hungary*
[3]*MTA-CSFK Lendület "Momentum" Large-Scale Structure (LSS) Research Group, 1121 Budapest, Konkoly Thege Miklos ut 15- 17, Hungary*
[4]*Institute of Physics and Astronomy, ELTE Eotvoes Lorand University, Pazmany Peter setany 1/ A, H-1117 Budapest, Hungary*
E-mail: nestorarsenov@gmail.com

Compact radio sources are scarce objects, yet important as reference points for astrophysical and space-flight applications. We present >3900 potential new compact radio sources, derived from a cross-match between the VLASS radio catalog and the recently published Quaia catalog. The VLASS catalog does not provide the type of its objects, while the Quaia catalog is derived from the Gaia catalog by selecting sources with negligible proper motion and performing a k-means search method on colour-colour parameter spaces to extract quasars. We find more than 45000 matched sources between the two catalogs with separations less than 2” from which >3900 present themselves as high fidelity compact radio source candidates by having radio flux density >20 mJy and a flux compactness ratio f_peak/f_tot>0.8. A proposal for observing 80 of these >3900 sources has been submitted to the European VLBI Network which should validate the candidates and provide constraints on the larger sample. We further analyze and discuss other cosmologically important qualities of the matched sources, like radio-loudness, its correlation to the spacial density in clusters and voids and to colour-colour parameter spaces.