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C3 - Command-line Catalogue Cross-matching. A new tool for modern astrophysical pipelines

The emerging need for efficient, reliable and scalable astronomical catalog cross-matching is becoming more pressing in the current data-driven science era, where the size of data has rapidly increased up to the Petabyte scale. C3 (Command-line Catalogue Cross-matching) is a multi-platform tool designed to efficiently cross-match massive catalogues from modern astronomical surveys, ensuring high-performance capabilities through the use of a multi-core parallel processing paradigm. The tool has been conceived to be executed as a stand-alone command-line process or integrated within any generic data reduction/analysis pipeline, providing the maximum flexibility to the end user, in terms of parameter configuration, coordinates and cross-matching types. We present the architecture of the tool and some practical examples of the potential use and performance. Moreover, since the modular design of the tool enables an easy customization to specific use cases and requirements, we present also an example of a special C3 version designed and used in the FP7 project ViaLactea, dedicated to cross-correlate Hi-GAL clumps with multi-band compact sources.