Superconducting interface in cuprate p-n heterostructures\textsuperscript{1}
MAXIME DION, LAURENT OLIVIER, GUILLAUME HARDY, SÉBASTIEN GODIN-PROULX, PATRICK FOURNIER, Université de Sherbrooke — In this explorative work, we combined two kinds of non-superconducting cuprates: over-doped Pr\textsubscript{2-}\textsubscript{x}Ce\textsubscript{x}CuO\textsubscript{4} and under-doped La\textsubscript{2-}\textsubscript{x}Sr\textsubscript{x}CuO\textsubscript{4} in the same p-n heterostructures in order to generate new behaviors through the interplay between the two materials. We will show that a thin superconducting layer ($<10$ nm) arise at the interface between these two compounds. We will discuss its actual location, its unexpected occurrence and its origin which is partly compatible with a charge transfer scenario that takes place in similar p-p cuprate heterostructures \cite{1,2}.

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\textsuperscript{1}A. Gozar \textit{et al.}, Nature 456, 782 (2008)
\textsuperscript{2}G. Logvenov \textit{et al.}, Science 326, 699 (2009)