

## Exact Phase Diagram of High-TC Superconductors

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**Abstract :** We propose a simple model to obtain an exact expression of  $T_c/(T_{c,max})$  for the temperature-doping phase diagram of superconducting cuprates. We showed that our model predicted most phase diagram scenario. We found the exact special doping points  $p(opt)$ ,  $p(qcp)$  and an accurate  $E(g,max)$ . Some other properties such as the stripes length  $100.1\text{\AA}$  and the energy gap in cuprates chain  $\approx 6\text{meV}$  can also be calculated exactly. Another interesting consequence of this simple picture is the new magic numbers and the ability to express everything using a  $(T_c,p)$  diagram via the golden ratio.

**Keywords :** superconducting cuprates, phase, pseudogap, hole doping, strips, golden ratio, soliton

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