The nested loop approach to the O(n) model on random maps

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We consider the O(n) loop model on random planar maps (i.e. graphs embedded in the sphere). We explain how an elementary combinatorial decomposition, which consists in cutting the maps along the outermost loops, allows to relate the O(n) model to the simpler problem of counting maps with controlled face degrees. This translates into a functional relation for the ``resolvent'' of the model, which is exactly solvable in several interesting cases. We then look for critical points of the model: our construction shows that at the so-called non-generic critical points, the O(n) model is related to the ``stable'' maps introduced by Le Gall and Miermont.