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Titre : A new approach to the regularity of the free boundaries.

Résumé : This is a joint work with Henrik Shahgholian and Nina Uraltseva. For the two-phase membrane problem $\Delta u = \frac{\lambda_+}{2}\chi_{\{u>0\}} - \frac{\lambda_-}{2}\chi_{\{u<0\}}$, where $\lambda_+ > 0$ and $\lambda_- > 0$, we prove in two dimensions (i.e. the physical case) that the free boundary is in a neighborhood of each "branch point" the union of two C^1-graphs. We also obtain a stability result with respect to perturbations of the boundary data. Our analysis uses an intersection-comparison approach based on the Aleksandrov reflection.