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A mechanical view on aneurisms VIRGINIE DUCLAUX, IRPHE, FRANÇOIS GALLAIRE, Laboratoire J. A. Dieudonné, CHRISTOPHE CLANET, LadHyX — Aneurisms form at bifurcations: Either before (aorta), either after (brain). They appear as a dilatation of the artery which increases in time and brakes when the local diameter becomes larger then few times the mean diameter. We model the artery as a cylindrical elastic membrane submitted to a pulsed flow. We first show that the artery either deforms locally, or globally. Both deformations are associated to the two different aneurisms locations. In a second step we show that above a critical diameter, the wave regime of the artery sweetches to an unstable deformation regime. We identify the parameters responsible for the instability and discuss their physiological counterparts.

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