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## Mechanisms of interface jumps, pinning and hysteresis during imbibition and drainage along an isolated pore

*Monday, 19 May 2025 11:40 (15 minutes)*

We study experimentally and numerically the mechanisms of interfacial jumps, pinning and capillary hysteresis along an elementary pore. To this end, we analyze quasi-static fluid imbibition and drainage cycles in a capillary tube with conical constrictions (ink-bottle). Depending on the slope of the conical section, we observe a range of interfacial behaviors, including capillary jumps, and interface pinning during both imbibition and drainage, which give rise to capillary hysteresis, that is, history dependence of the interface position. A theoretical model based on pressure balance at the interface captures the full spectrum of behaviors in terms of the pore geometry, contact angle and surface tension.

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### References

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