Pulsatile flow in small arteries G.J. BRERETON, A. MAJID, M.M.
KOOCHESFAHANI, Michigan State University — Womersley's analyses of blood
flow in elastic-walled arteries assume solution forms that treat the flow as periodic
and continuously unsteady. In smaller arteries such as the popliteal and anterior
tibial, measurements of flow variables indicate that they are not continuously un-
steady but are characterized more accurately as rapid transient motions followed by
recovery towards an almost stationary state, repeated in successive cycles. When
the recovery phase exceeds about half a viscous timescale, the flow comes to rest
before restarting in the following cycle. As such, its solution is that of an initial
value problem and not a continuously unsteady one. In this talk, we discuss the
accuracy with which flows measured in these arteries are described by solutions that
treat them as initial value problems.

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