

# Boundary control problems in blood flow modeling: theoretical aspects and numerical examples

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## Abstract

Vascular diseases, such as brain aneurysms and atherosclerosis, are the main cause of death in western countries. Such pathologies are not fully understood and lack precise diagnosis procedures. The mathematical modeling of blood flow in the cardiovascular system, both in normal and pathological conditions, may be the way to provide a computational tool to be used for diagnosis, prognosis or training purposes. In this sense, accurate numerical simulations must be achieved, in order to be considered reliable. However, this can be a challenge since important data, needed to close the mathematical model, is usually missing. To overcome such difficulty, optimal control techniques can be used. Here, we present possible scenarios for the application of control problems in hemodynamics, and we will discuss some mathematical and numerical aspects related to these issues.

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## References

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