Dear Editors,

below you find a short description of the novelty of the paper as requested in the submission process.

The paper proposes a methodology for assessing para-vascular function by using PDE constrained optimization for parameter identification. It is based on recent breakthroughs in basic medicine where a novel component in the metabolism is proposed. Furthermore, with clinical collaborators we are testing out a new MRI protocols for assessing this metabolism. The results presented in this paper suggest that the proposed methodology is both feasible and robust.