# 10

For This exercise, a non-homogeneous material profile is considered in which a defined middle section has different and values. An ideal and approximated version of this material is visible in Figure 1.

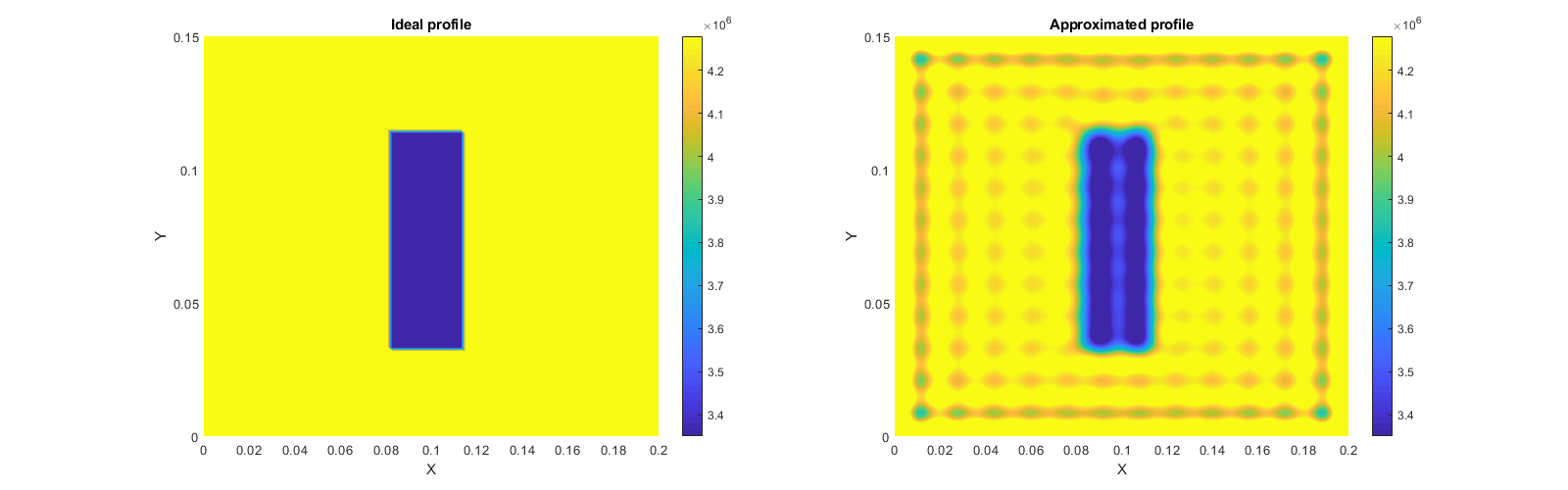


Figure : non-homogeneous material profile

The approximation of this material profile is made using a Fourier expansion according to , with the same basis functions as used for the homogeneous model.

Now this approximation can be used to simulate the non-homogeneous model which can now be written as and can be rewritten into equation .

This can now be used to simulate the non-homogeneous model in the same way as the homogeneous model, only instead of dividing the right side of the equation by the constant , it is now multiplied with the inverse of the approximated matrix.