

# Entropy production estimate of the ES-BGK model below the critical Prandtl parameter

Doheon Kim<sup>1</sup>, Meongsu Lee<sup>??</sup> and Seok-bae Yun<sup>2</sup>

1) *School of Mathematics, Korea Institute for Advanced Study, Seoul 02455, Korea*

2) *Department of Mathematics, Sungkyunkwan University, Suwon 440-746, Korea*

Corresponding Author : Seok-Bae Yun, sbyun01@skku.edu

## ABSTRACT

Ellipsoidal BGK model (ES-BGK) is a general version of the BGK model where the local Maxwellian is generalized to a ellipsoidal Gaussian with a Prandtl parameter so that the model can produce the correct transport coefficient in the Navier-Stokes limit. The correct Prandtl number is obtained when the Prandtl parameter is  $-1/2$ , but various familiar structure of the original BGK model breaks down in this case, which give rise to various interesting mathematical issues. In this talk, we consider our recent result on the entropy-entropy production estimate of the ES-BGK model. Unexpected is that the estimate holds even below the critical Prandtl parameter  $-1/2$ .