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Majority of theories, associated with the variety of flame acceleration scenarios, are based on the "geometrical formulation": namely, the wrinkled to planar flame speeds ratio, w/w_L , is evaluated as the scaled increase in the flame surface area, while the entire combustion chemistry is immersed in $L S$, which is assumed to be constant. However, in the practical reality, $L S$ may experience spatial and temporal variations; at least, due to the associated pressure and temperature distribution within a combustor, and their evolution during burning. In the present work, we initiate the systematic study of a much more intriguing situation – when $L S$ - variations are externally imposed in a manner being a free functional of the formulation. This is relevant, in particular, to multi-phase combustion in dusty environment, with a non-uniform distribution of combustible and/or inert dust; as well as to the event of spatial variations of the equivalence ratio. First, linear variation of spatial $L S$ - distribution is incorporated into the Bychkov theories of flame acceleration due to wall friction [Physical Review E 72 (2005) 046307] and solved analytically. Second, we implement linear variation of flame speed into computational platform. A backbone for the platform is a fully compressible, finite-volume Navier-Stokes code solving for the hydrodynamics and combustion equations in a homogeneously and non-homogeneously -gaseous, laminar environment. It is investigated how linear variation of flame speed can affect the flame acceleration mechanism. Theory also validated by means of computational simulations. This work is supported by the Alpha Foundation for the Improvement of Mine Safety and Health as well as West Virginia University's Program to Stimulate Competitive Research (PSCoR) and West Virginia University's Senate Award for Research and Scholarship.