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Development of microstructural and voxel based models of deformation and failure of the porous ceramics for assessment of ballistic performance

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Highlights

- Hot-press alumina ceramics microstructure analysis of fracture surface specimens was done to get Weibull distribution function of pores diameters.
- Numerical models of ceramics (3D FEA with stochastic volume distribution of different porous diameter) were developed to obtain elasticity and tensile strength vs porosity.
- Stochastic voxel approach was proposed to predict the behaviors of porous ceramics under local impact.
- The ceramic disk's residual velocities after ballistic impact were agreed very well with the experimental ones.

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