

On the Volume of Ganglion Cell Stimulation in Visual Prostheses by Finite Element Discretization

Authors : Diego Luján Villarreal

Abstract : Visual prostheses are designed to repair some eyesight in patients blinded by photoreceptor diseases, such as retinitis pigmentosa (RP) and age-related macular degeneration (AMD). Electrode-to-cell proximity has drawn attention due to its implications on secure single-localized stimulation. Yet, few techniques are available for understanding the relationship between the number of cells activated and the current injection. We propose an answering technique by solving the governing equation for time-dependent electrical currents using finite element discretization to obtain the volume of stimulation.

Keywords : visual prosthetic devices, volume for stimulation, FEM discretization, 3D simulation

Conference Title : ICBE 2023 : International Conference on Biomedical Engineering

Conference Location : Barcelona, Spain

Conference Dates : May 22-23, 2023