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Abstract: Space is a domain of temperature and radiation extremes, and to this end multi-layer insulation applications are key in protecting vital components in satellites. Aerogel has been recognized as an ideal material for insulation design do to its low thermal conductivity, therefore the effective modeling of aerogel conduction has been a key area of research. Due its nonporous nanoscale structure, Fourier’s Law cannot be utilized to model heat transfer. Instead, the Boltzmann