# On Characterization Canal Surfaces around Timelike Horizontal Biharmonic Curves in Lorentzian Heisenberg Group Heis$^3$

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In this paper, we describe a new method for constructing a canal surface surrounding a timelike horizontal biharmonic curve in the Lorentzian Heisenberg group Heis$^3$. Firstly, we characterize timelike biharmonic curves in terms of their curvature and torsion. Also, by using timelike horizontal biharmonic curves, we give explicit parametrizations of canal surfaces in the Lorentzian Heisenberg group Heis$^3$.

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