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INSTITUTO DE CIENCIAS MATEMÁTICAS

SPECIAL COLLOQUIUM

A SURVEY ON STATIONARY ISOTHERMIC SURFACES AND THEIR RELATED PROBLEMS

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ABSTRACT: This talk concerns some overdetermined problems for the heat equation. A smooth hypersurface properly embedded in Euclidean space is said to be stationary isothermic if the temperature is constant on it at every time. We consider the problems over one-phase or multi-phase heat conductors under appropriate initial and boundary conditions. It has been shown that the existence of a stationary isothermic surface forces the problems to have some sort of symmetry. We make a survey of such results. Also, a smooth hypersurface is said to have the constant flow property if the heat flux across it is constant at every time. We mention that similar symmetry propositions hold true if a surface with the constant flow property replaces a stationary isothermic one.

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