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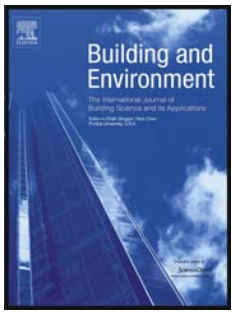

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A data-driven method to describe the personalized dynamic thermal comfort in ordinary office environment: from model to application

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Abstract

Recent advances of information technology and the low cost of computing devices make it possible to collect end users' true thermal sensations at the building operation stage. This enables us to build personalized thermal comfort model from a new aspect. This paper proposes a data-driven method to describe the personalized thermal comfort in ordinary office environment. The model structure shows the condition of heat balance of human body, with four personalized coefficients estimated by on-line voting data. The adjustable coefficients provide the freedom to capture the personal differences in thermal comfort requirement. In contrast, the well-known PMV model is only an average model, which cannot reflect such differences. The model performance is evaluated by a field experiment study. A personal energy saving potential analysis is also presented as one of the applications. Both the experiment results and simulation results demonstrate the high accuracy of the data-driven

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