



DESIGN, AUTOMATION  
AND TEST IN EUROPE

THE EUROPEAN EVENT FOR  
ELECTRONIC SYSTEM DESIGN & TEST

20 - 22 APRIL 2026  
VERONA, ITALY

PALAZZO DELLA GRAN GUARDIA



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# FastRW: An Efficient Random Walk Method for Steady-State Thermal Analysis

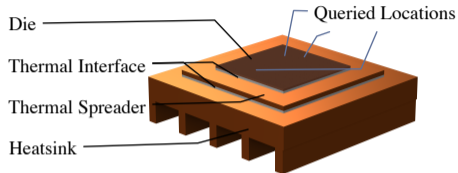
Zixiao Wang, Tianshu Hou<sup>†</sup>, Chenghan Wang, Zhen Zhuang, Tsung-Yi  
Ho, Farzan Farnia, Bei Yu<sup>†</sup>

The Chinese University of Hong Kong

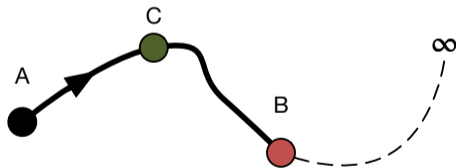
April 12, 2026



# FastRW: Fast Random Walk for Thermal Analysis



Only a few hotspot temperatures are needed.



**A:** start point

**B:** end point (standard methods, later)

**C:** end point (this work, earlier)

FastRW shortens paths via prior estimation.

Truncation error of a random walk path:

$$\mathbb{E}[\mathbb{P}_{t_\Lambda}^\infty] = \Lambda T(X_{t_\Lambda})$$

A cheap prior  $\tilde{T}$  reduces error to  $\Lambda \epsilon$  ( $\epsilon \ll T$ ), enabling **much shorter paths**.

## Key Result

Over **6.5×** overall speedup  
with **improved** accuracy.

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**THANK YOU!**