



**Barcelona
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Renaissance of PROFET

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PROFET

PROFET (2019)¹

Introduced an initial benchmark for measuring bandwidth—latency

It was not well adopted by the community.

Complex mechanism based on:

- Bandwidth—latency curves

- Application profiling

- CPU parameters

- Equations

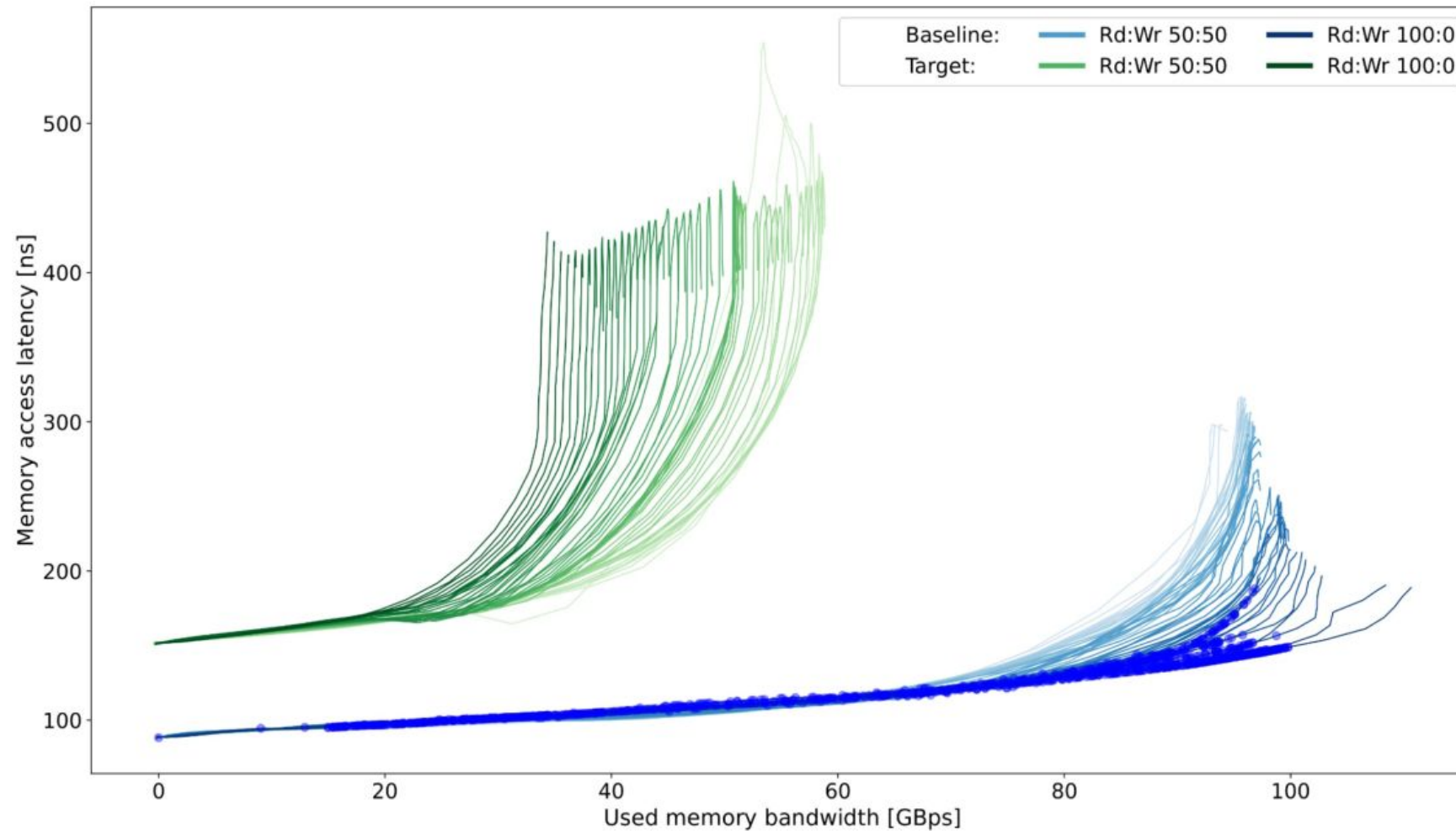
What can you do with PROFET?

With PROFET, you can predict how an application performance changes when it is executed on a different memory system in seconds

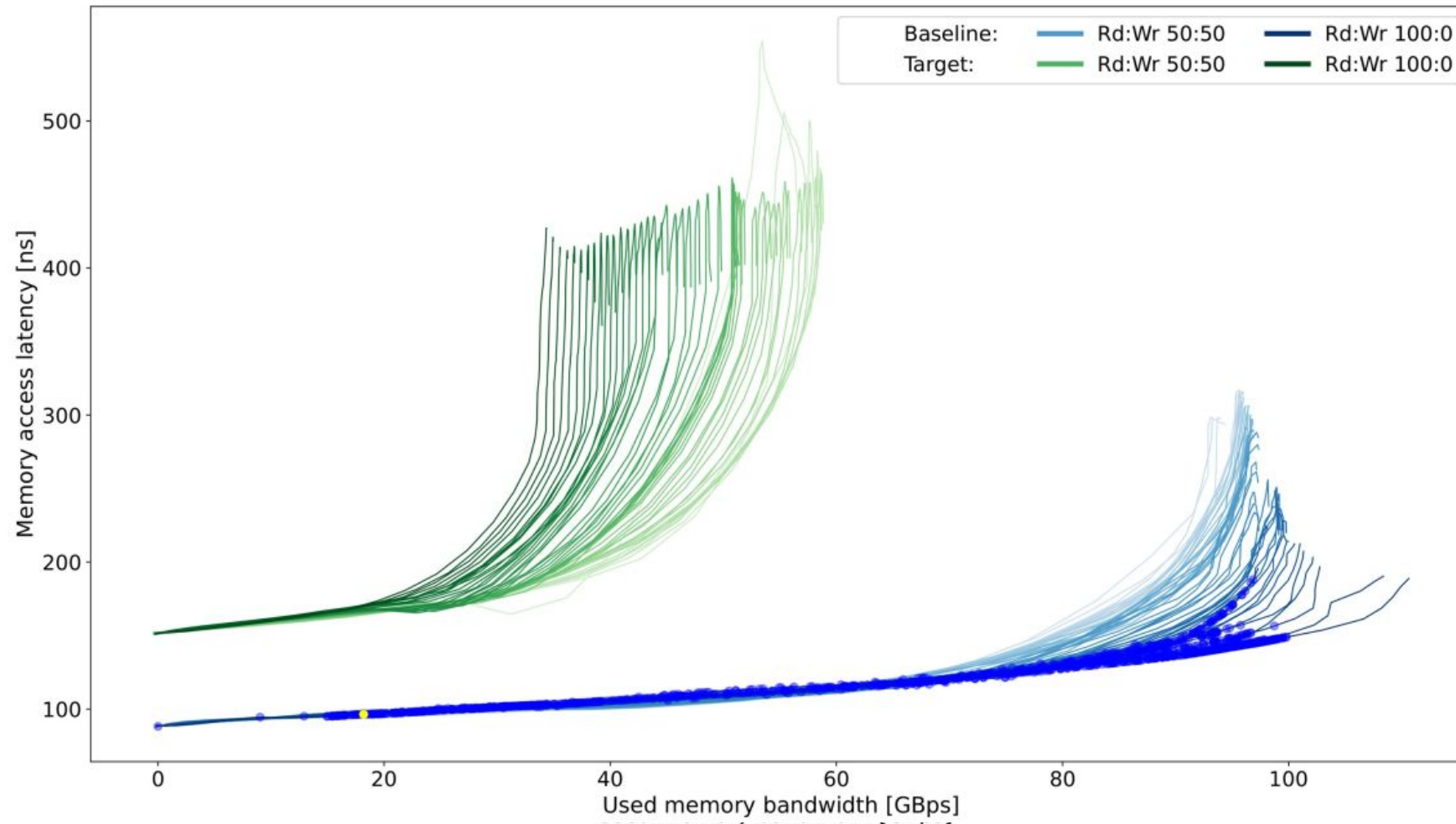
PROFET reveals how new memory technologies impact application performance

Fast design exploration of memory systems

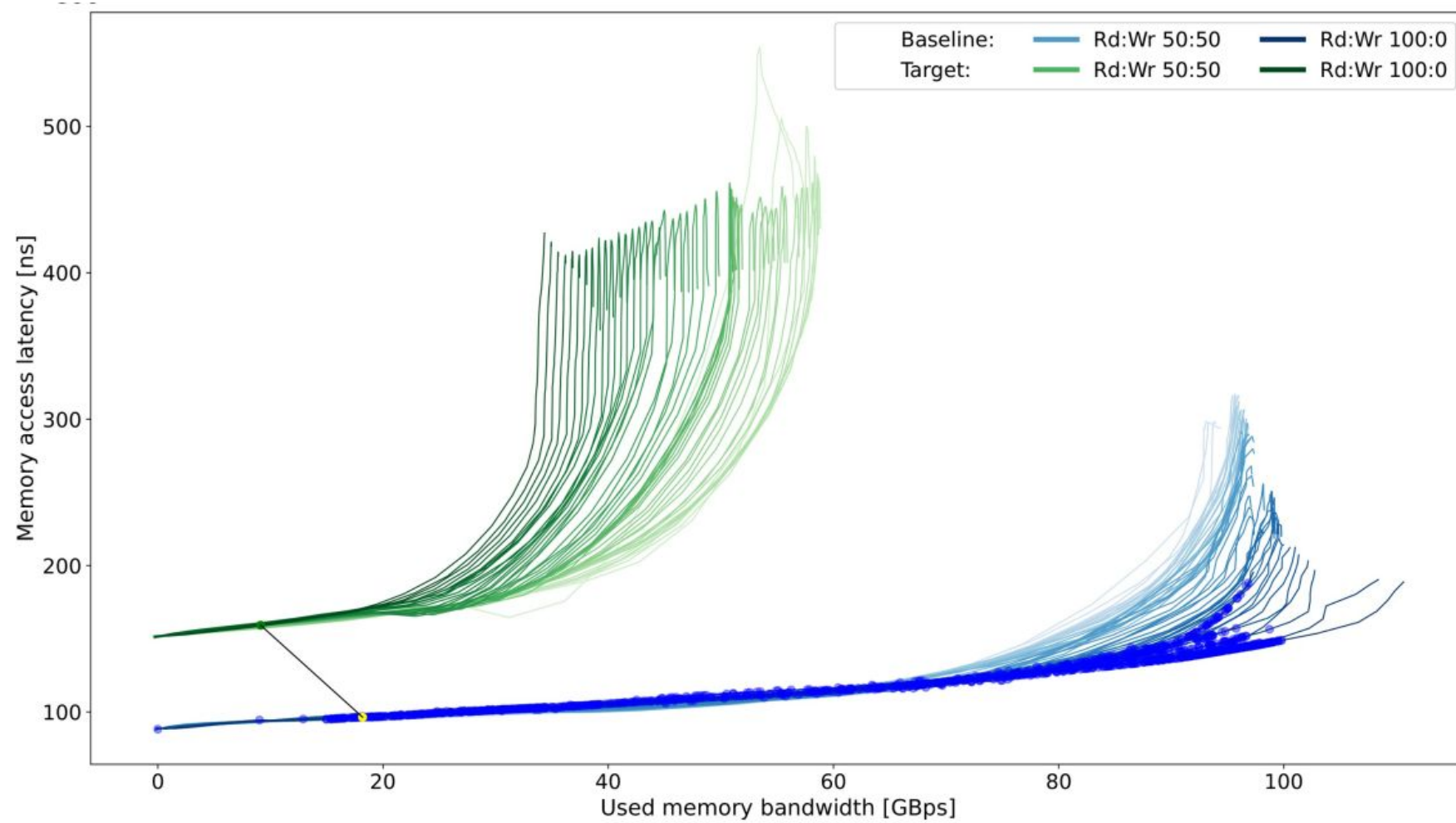
How PROFET does this?



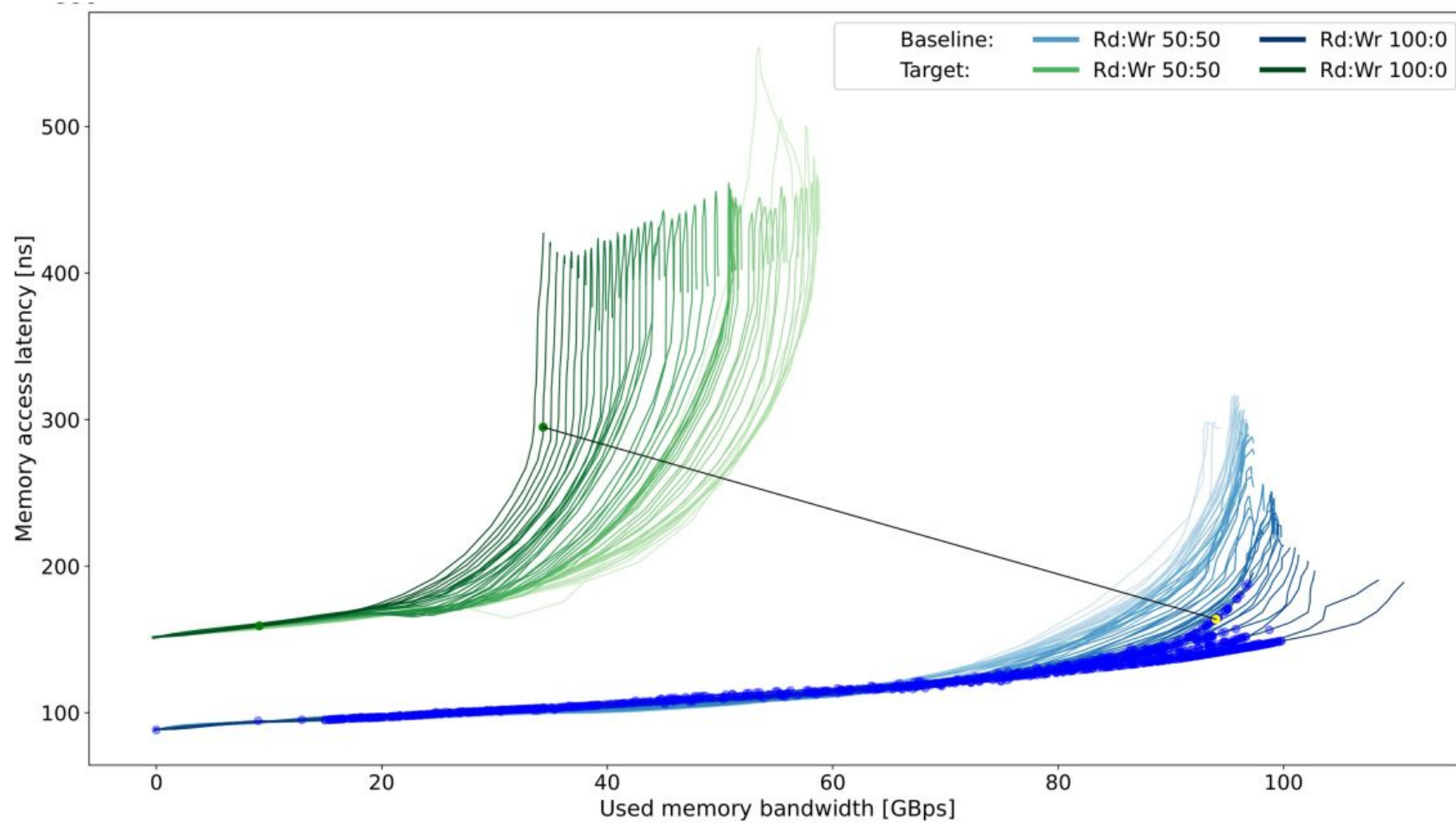
How PROFET does this?



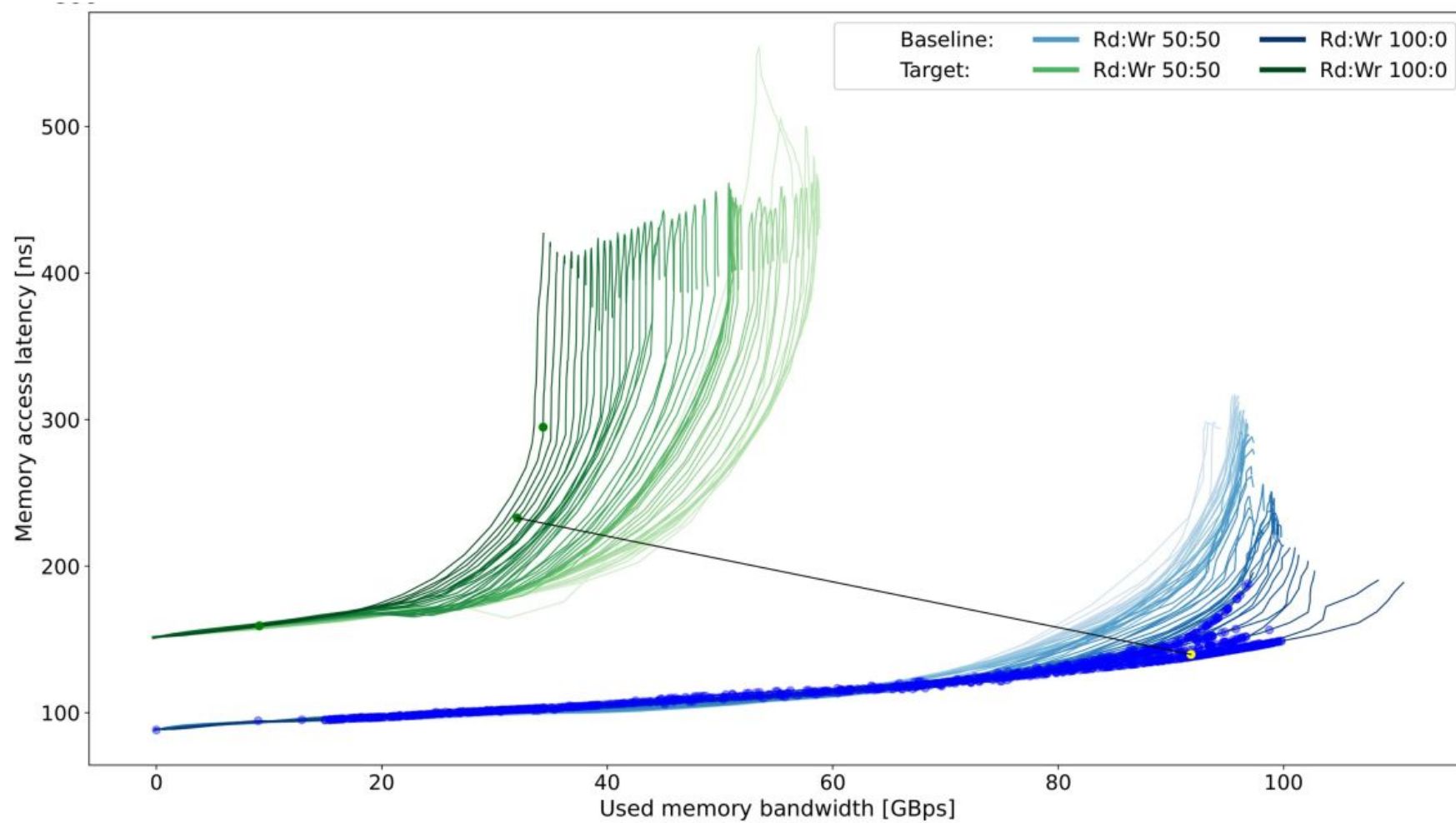
How PROFET does this?



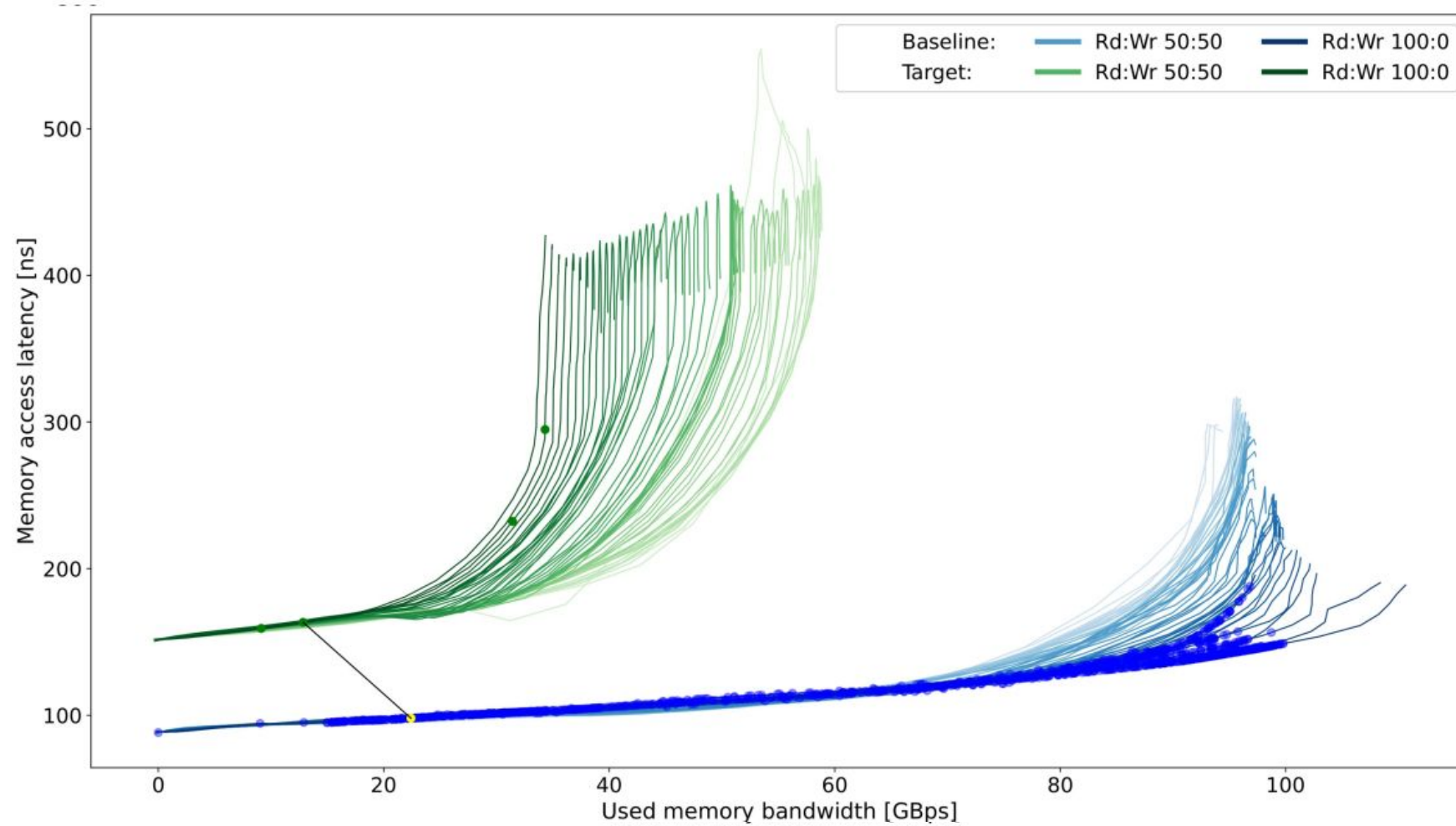
How PROFET does this?



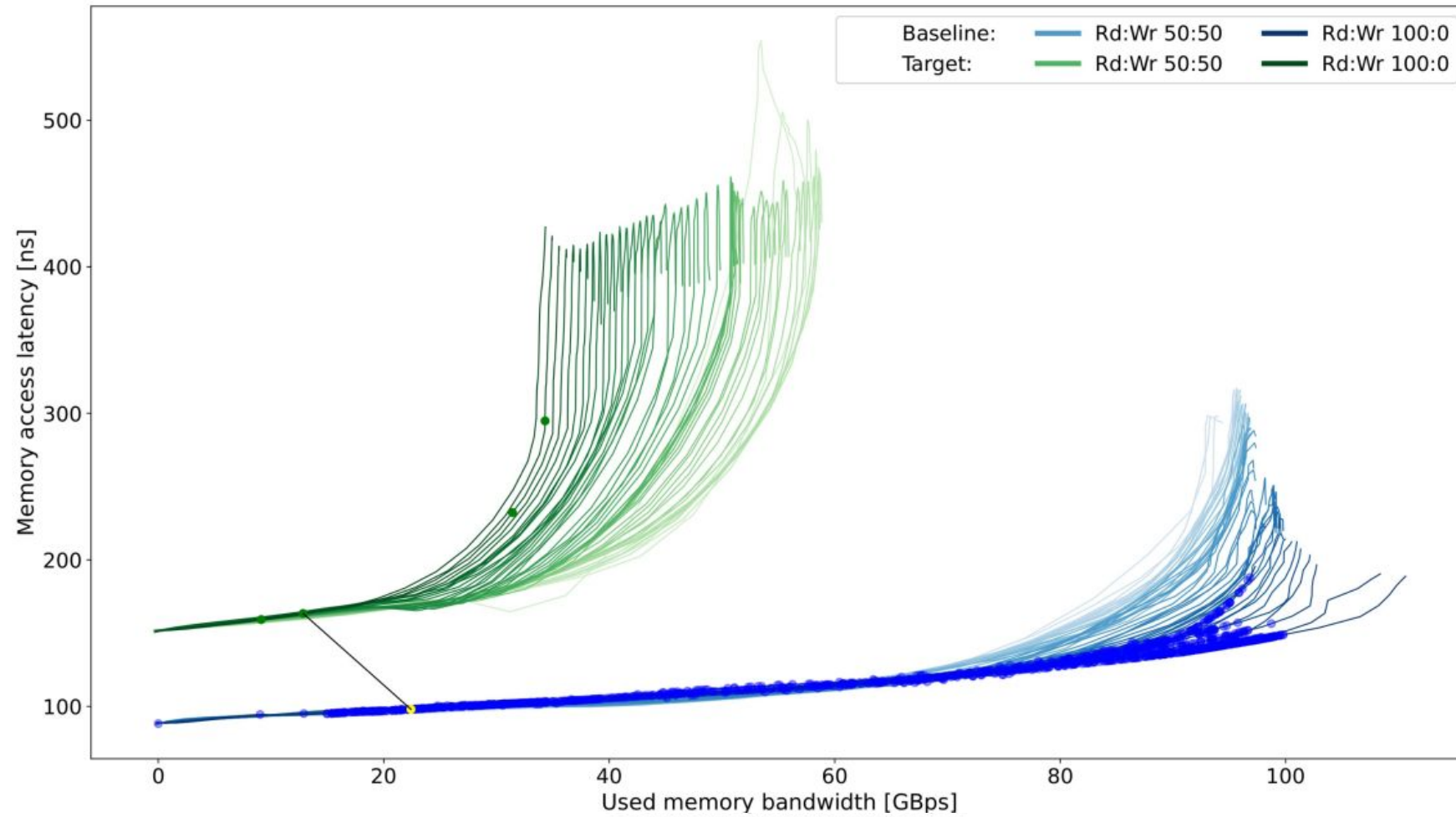
How PROFET does this?



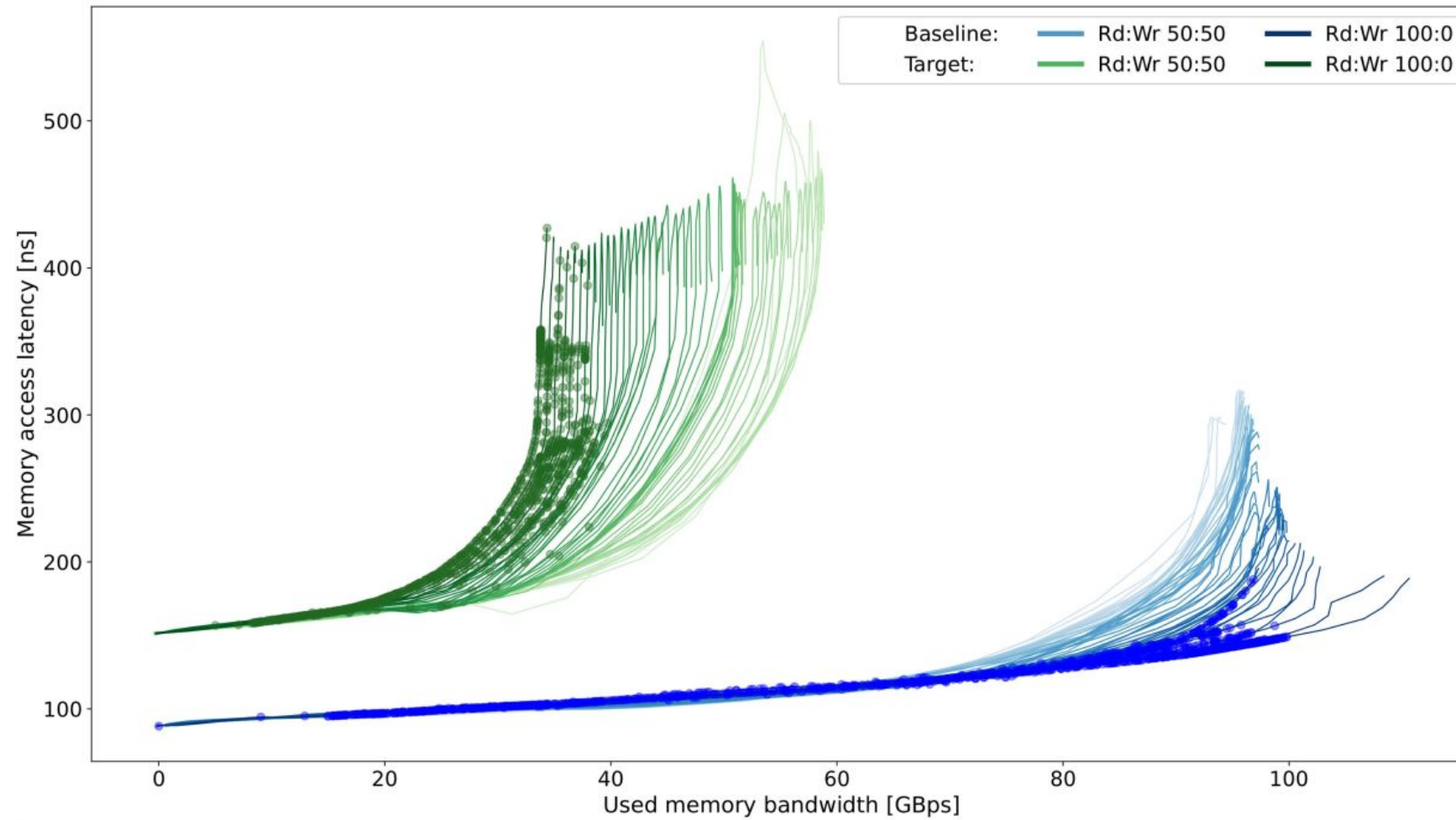
How PROFET does this?



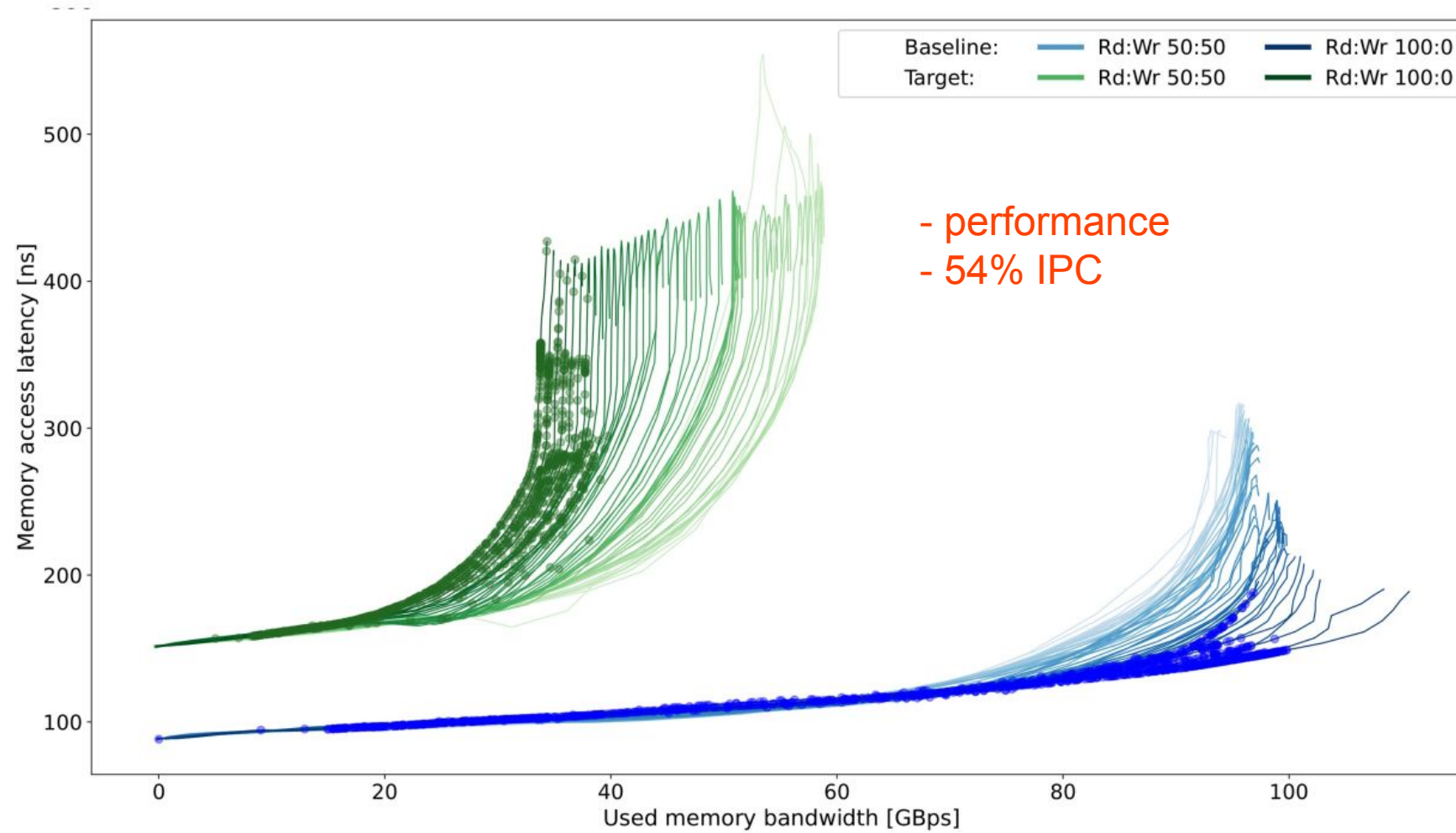
How PROFET does this?



How PROFET does this?



PROFET output



Evaluation

Renaissance of PROFET

Evaluated on:

Huawei Kunpeng 920: DDR4 – 1600/1866/2933

Cascade lake: DDR4/Optane

Emerald rapids: DDR5 4800/3200

Current working on:

Intel max 9480: DDR5 4800/HBM2

Emerald rapids: DDR5 4800/CXL memory expander

First PROFET publication:

Sandy bridge: DDR3 – 800/1006/1333/1600

Knights landing: DDR4 2400/MCDRAM



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