- **_Result_**:Programs can read memory it should not

- **_Affects_**: All modern CPU/OS

- **_Vector_**: Uses _out of order execution_ to read forbidden memory and _cache timing_ as side channel to exfiltrate data

- **_How bad_**: Bad

- **_Fixes_**: Needs changes in CPU and/or OS patches. Modest (X%) to severe (XX%) performance impact, higher on older CPU. Performance impact varies and depends on CPU and workload type.

SPECTRE

▸ *Result*:Programs can read all memory

▸ *Affects*: All modern CPU/OS

▸ *Vector*: Uses *speculative execution* to read forbidden memory and *cache timing* to exfiltrate data

▸ *How bad*: Very bad

▸ *Fixes*: Needs changes in CPU and/or changes in programs. Performance impact varies and depends on CPU and workload type.

MELTDOWN

▸ *Result*:Programs can read memory it should not

▸ *Affects*: All modern CPU/OS

▸ *Vector*: Uses *out of order execution* to read forbidden memory and *cache timing* as side channel to exfiltrate data

▸ *How bad*: Bad

▸ *Fixes*: Needs changes in CPU and/or OS patches. Modest (X%) to severe (XX%) performance impact, higher on older CPU. Performance impact varies and depends on CPU and workload type.