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Decoupling of structural and electronic phase transitions in VO₂¹
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JUNQIAO WU TEAM — Using optical, TEM and ultrafast electron diffraction ex-
periments we find that single crystal VO₂ microbeams gently placed on insulating
substrates or metal grids exhibit different behaviors, with structural and metal-
insulator transitions occurring at the same temperature for insulating substrates,
while for metal substrates a *new monoclinic metal phase* lies between the insulating
monoclinic phase and the metallic rutile phase. The structural and electronic phase
transitions in these experiments are strongly first order and we discuss their origins
in the context of current understanding of multi-orbital splitting, strong correlation
effects and structural distortions that act cooperatively in this system.

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