

Why sticking time matters: Experimental signatures of quasifission in reactions leading to Curium

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Fusion is a delicate process, particularly when production of the heaviest elements is the aim. Quasifission – a fission-like reaction outcome that takes place over incredibly short ($< 10^{-20}$ s) timescales, before a compound nucleus can form – is one of the most important competitors with fusion in reactions forming heavy (and superheavy) nuclei. This work will demonstrate how to take a ‘snapshot’ of quasifission processes that occur over zeptoseconds, illustrate how quasifission probabilities and timescales relate to the selected reaction parameters, and provide experimental evidence of quasifission for reactions leading to isotopes of Curium using the Australian National University’s large solid-angle CUBE detector array and 14UD tandem accelerator. Broader implications of this work on the ANU’s efforts to model a wide range of reaction outcomes within a single model will be discussed.