

radbase: codes for non-linear least-squares analysis of the nuclear radius network - towards next generation recommended values of nuclear charge radii

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Once measurements have been converted into nuclear radii data, the challenge remains to combine these measurements into a consistent set of radii. Given the high number of radii (>800) to optimize and the tight coupling of radii from relative measurements, care must be taken to make a completely accurate non-linear approach feasible. *radbase*, an open-source set of Python codes, analyzes the network formed by nuclear radius data and breaks the minimization into computationally simple steps. Additionally, *radbase* supports including correlations between different pieces of data, an aspect missing from previous evaluations. We present the techniques employed in the code and compare the results of our analysis with those of other compilations. Future work, such as calculating correlations between data and integration with a planned nuclear radius database, will also be discussed.

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