



电荷半径的局域关系

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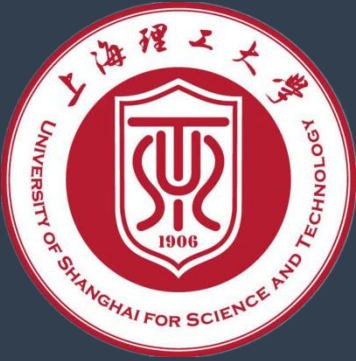
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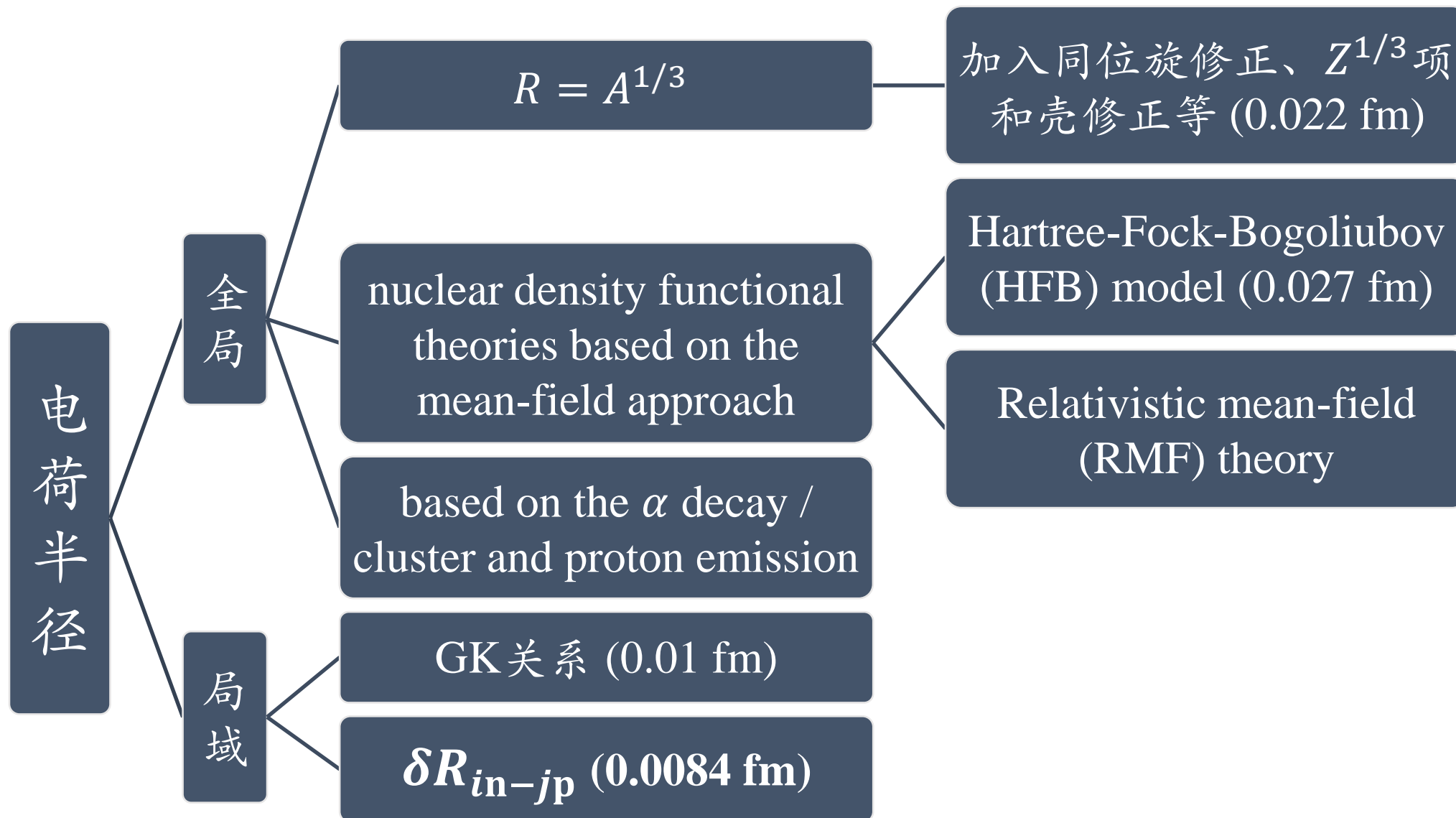
δR_{nn} & δR_{pp} 关系



PART
01

Introduction

Introduction





PART
02

in - jp 关系

$in - jp$ 关系

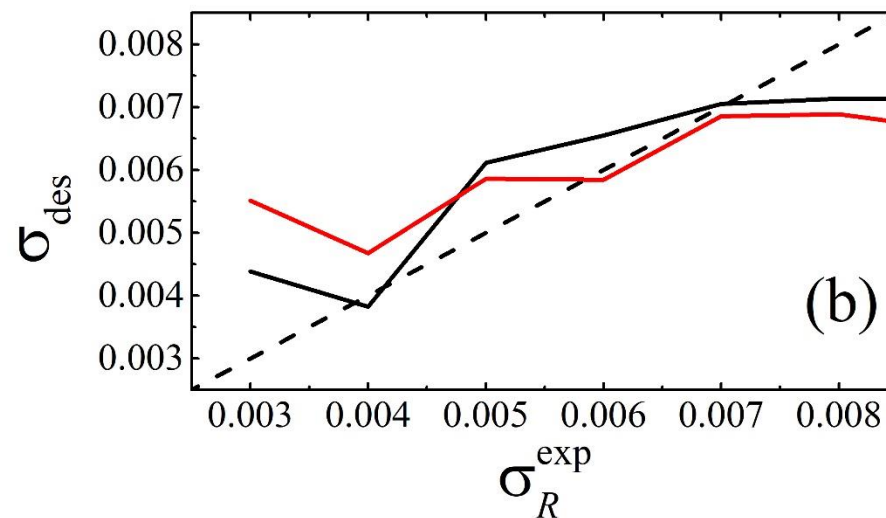
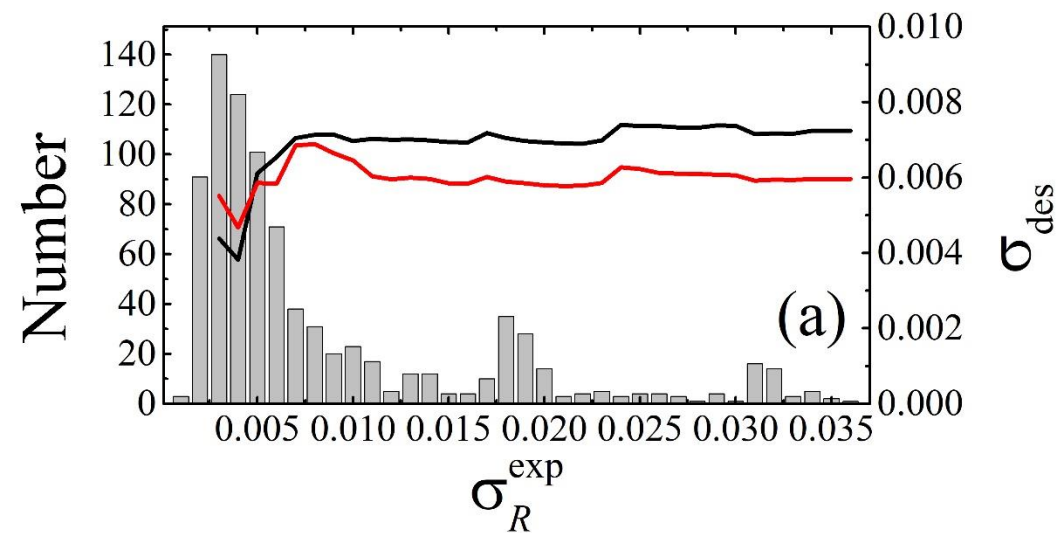
N	(a) δR_{1n-1p}				(b) δR_{1n-2p}			
		(3)	(1)			(3)	(1)	
		(2)	(4)					
						(2)	(4)	
	(c) δR_{2n-1p}				(d) δR_{2n-2p}			
	(3)		(1)			(3)		(1)
	(2)		(4)					
						(2)		(4)
								N

- $\delta R_{1n-1p} = R(N, Z) + R(N - 1, Z - 1) - R(N - 1, Z) - R(N, Z - 1)$
- $\delta R_{1n-2p} = R(N, Z) + R(N - 1, Z - 2) - R(N - 1, Z) - R(N, Z - 2)$
- $\delta R_{2n-1p} = R(N, Z) + R(N - 2, Z - 1) - R(N - 2, Z) - R(N, Z - 1)$
- $\delta R_{2n-2p} = R(N, Z) + R(N - 2, Z - 2) - R(N - 2, Z) - R(N, Z - 1)$

- B. H. Sun, Y. Lu, J. P. Peng, C. Y. Liu, and Y. M. Zhao, *Phys. Rev. C* **90**, 054318 (2014)
- M. Bao, Y. Lu, Y. M. Zhao, and A. Arima, *Phys. Rev. C* **94**, 064315 (2016)

$in - jp$ 关系

	σ_R (fm)	N_R	$\bar{\sigma}_R$ (fm)	N_R
δR_{1n-1p}	0.0084	394	0.0072	650
δR_{1n-2p}	0.013	296	0.0116	551
δR_{2n-1p}	0.0096	427	0.0078	725
δR_{2n-2p}	—	—	0.0088	682
Total	—	—	0.0076	855

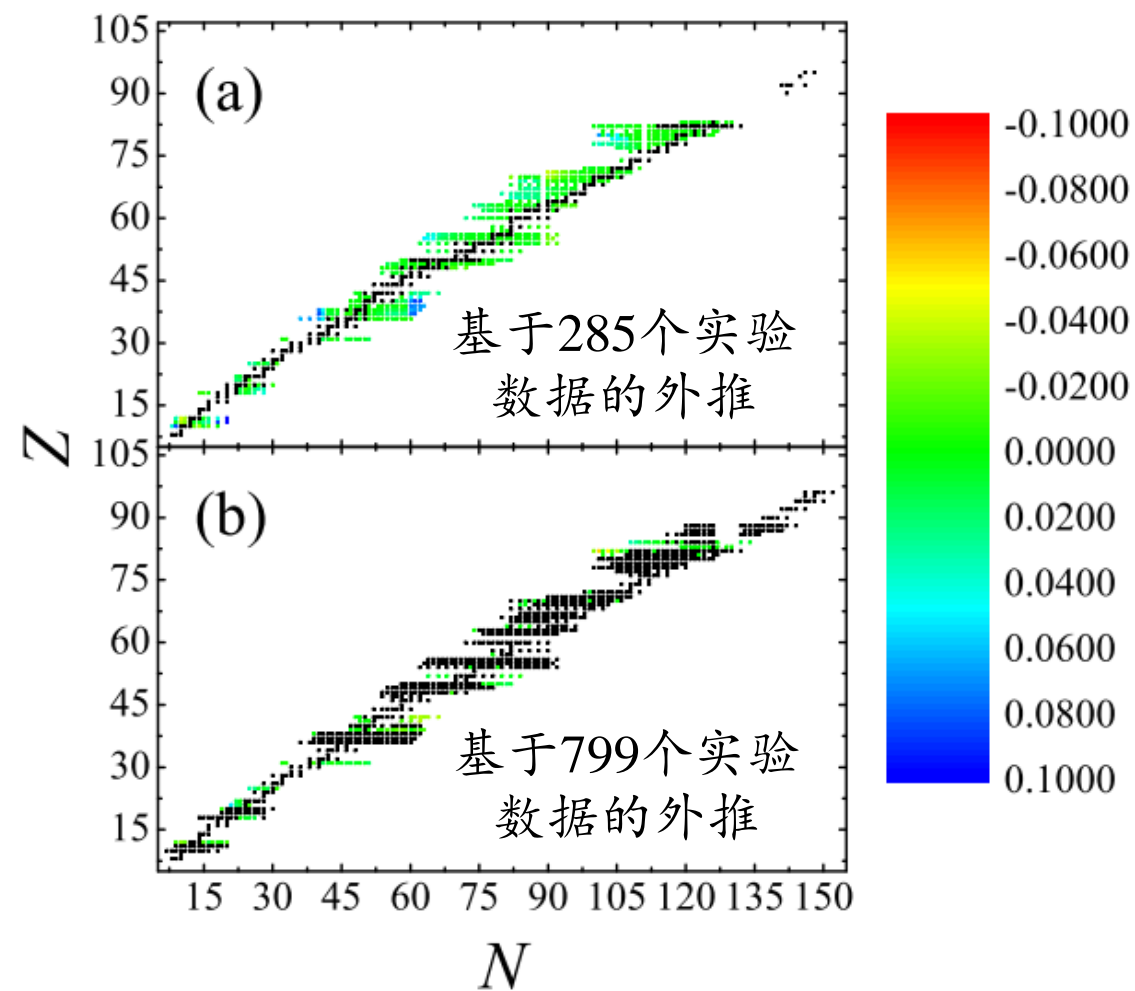


- B. H. Sun, Y. Lu, J. P. Peng, C. Y. Liu, and Y. M. Zhao, *Phys. Rev. C* **90**, 054318 (2014)
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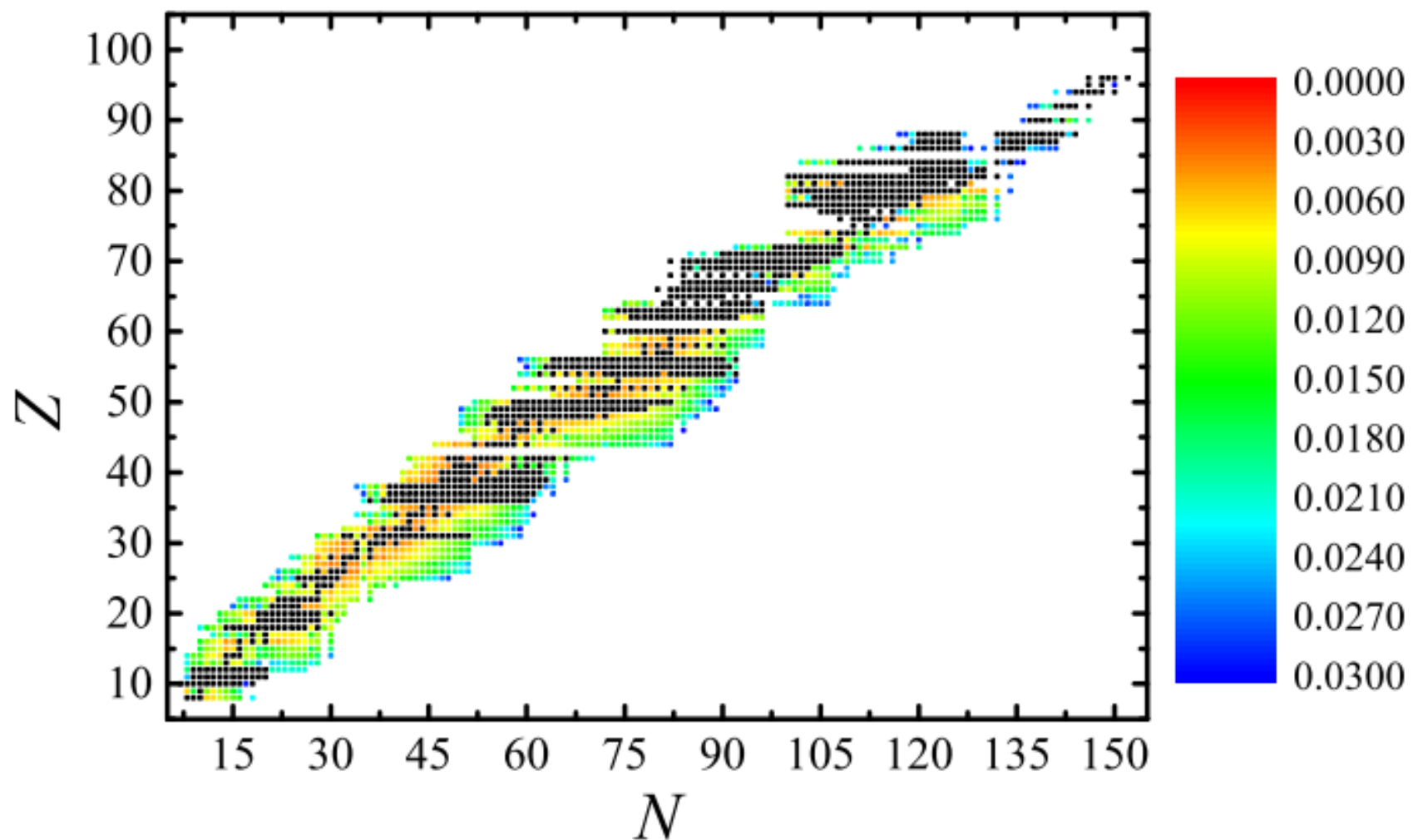
$in - jp$ 关系

	σ'_R (fm)	N'_R	σ''_R (fm)	N''_R
δR_{1n-1p}	0.0132	302	0.0174	122
δR_{1n-2p}	0.0199	189	0.0261	110
δR_{2n-1p}	0.0221	218	0.0173	85
δR_{2n-2p}	0.0220	163	0.0246	87
Total	0.0225	520	0.0147	134

判断质子晕: $^{17}_{10}\text{Ne}_7$, $^{25,26}_{15}\text{P}$



$in - jp$ 关系



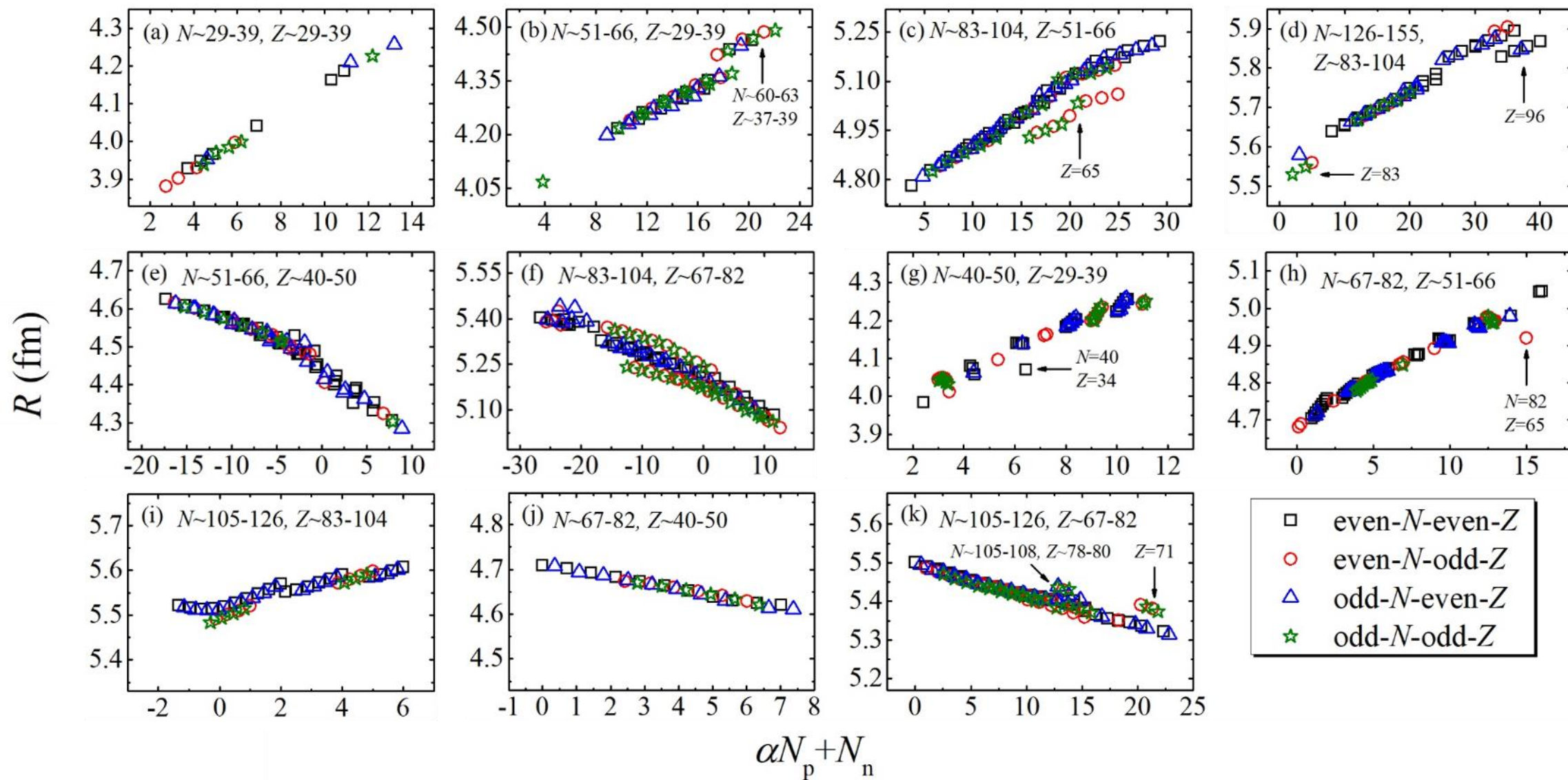
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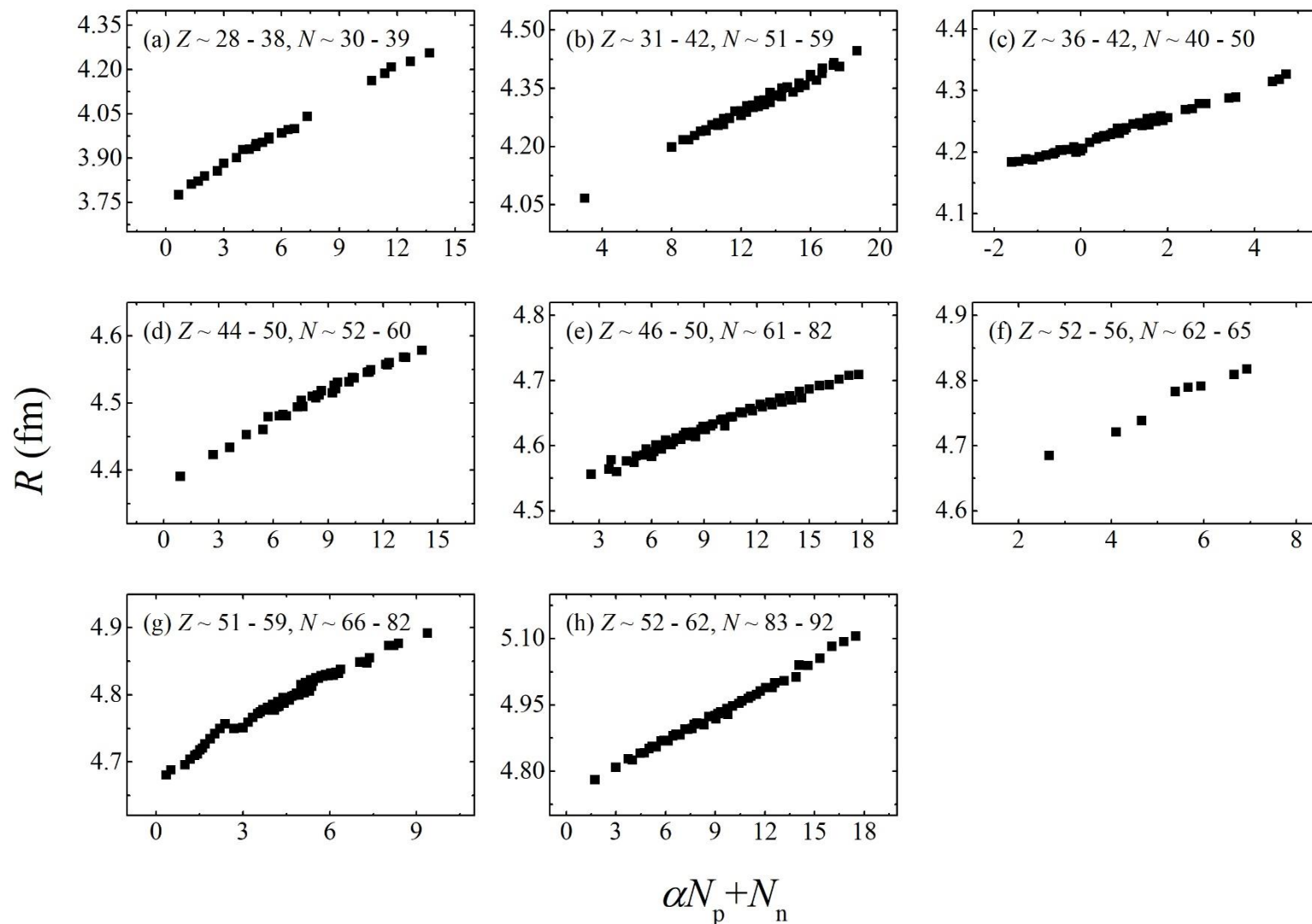
PART
03

$(\alpha N_p + \beta N_n)$ 关系

$(\alpha N_p + \beta N_n)$ 关系

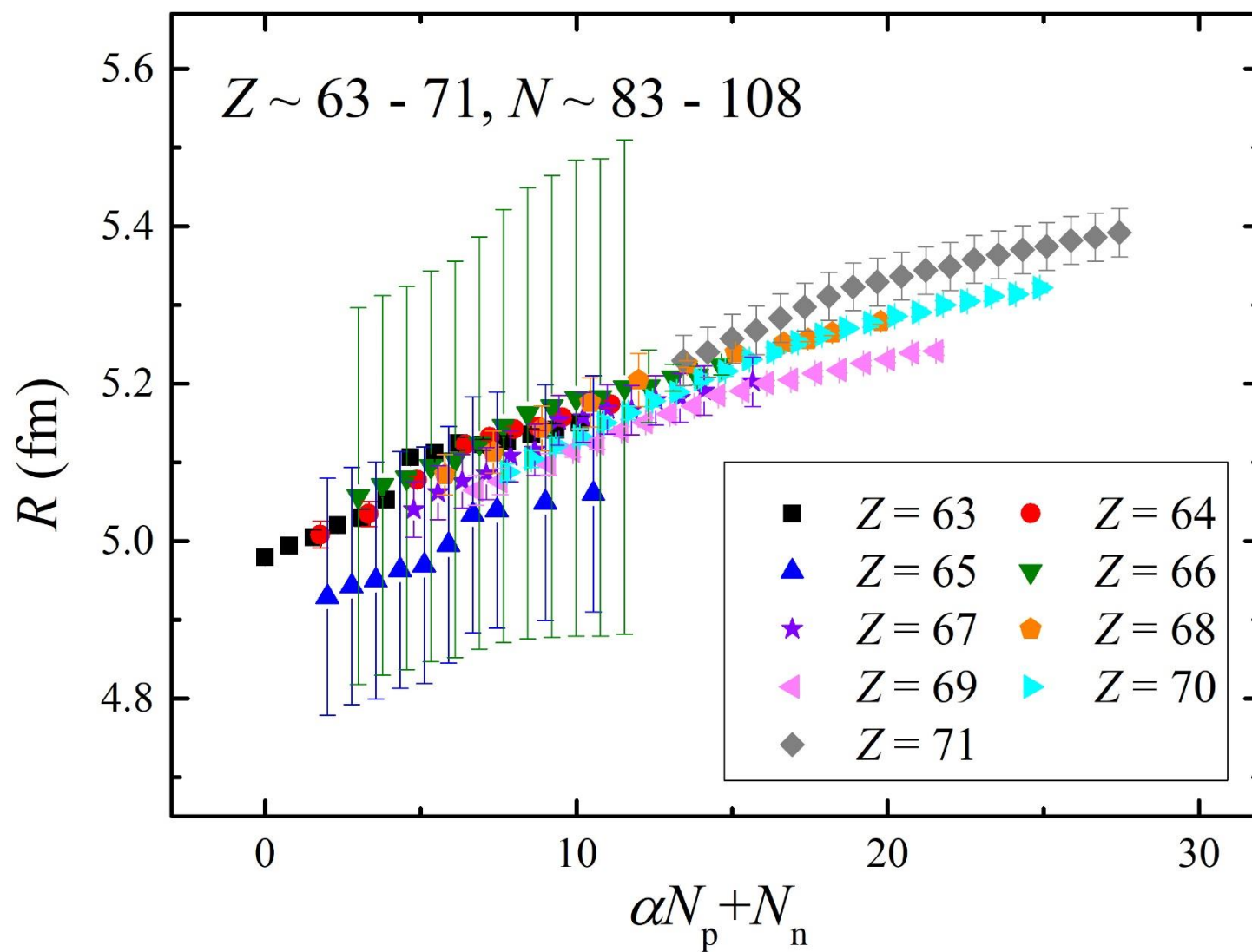


$(\alpha N_p + \beta N_n)$ 关系

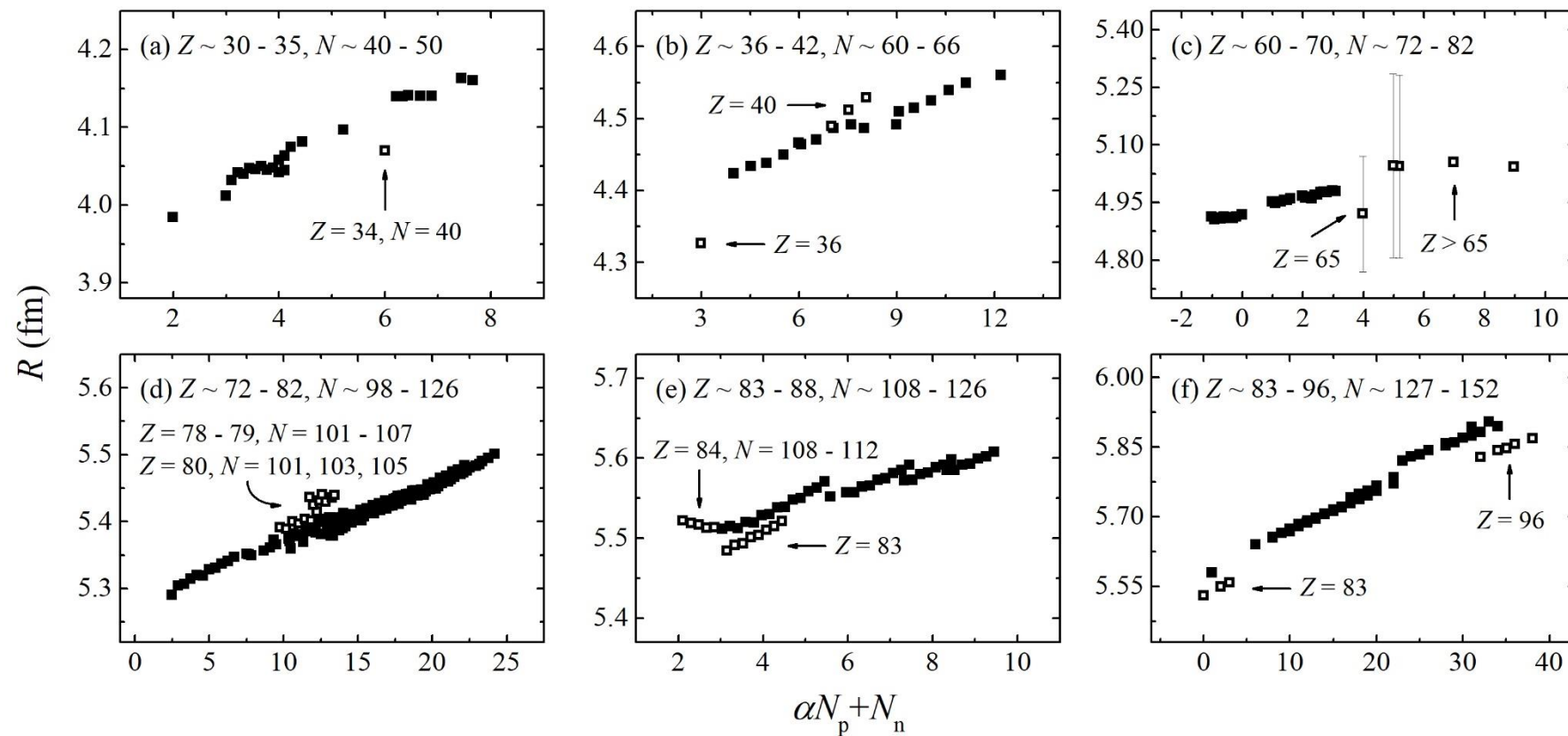


	σ_R (fm)	N_R
(a)	0.0075	23
(b)	0.0070	52
(c)	0.0036	46
(d)	0.0044	33
(e)	0.0046	54
(f)	0.0037	8
(g)	0.0057	69
(h)	0.0048	48

$(\alpha N_p + \beta N_n)$ 关系

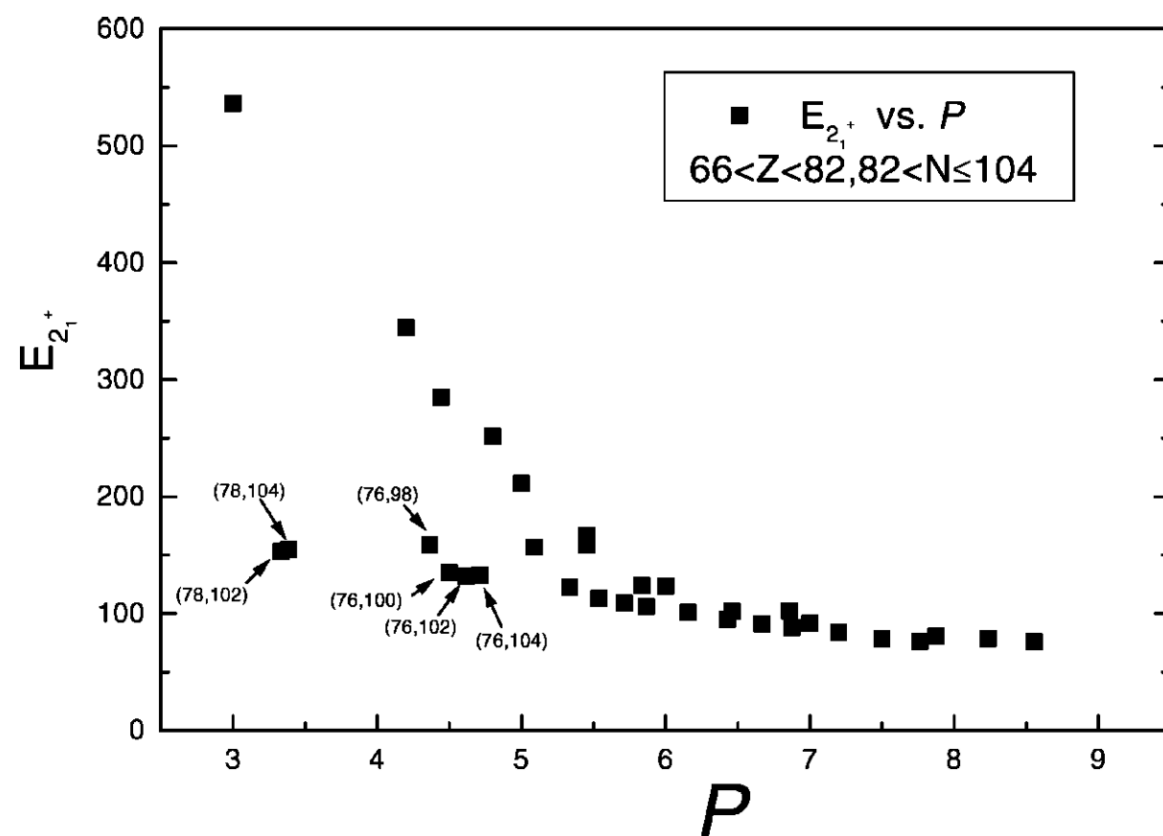
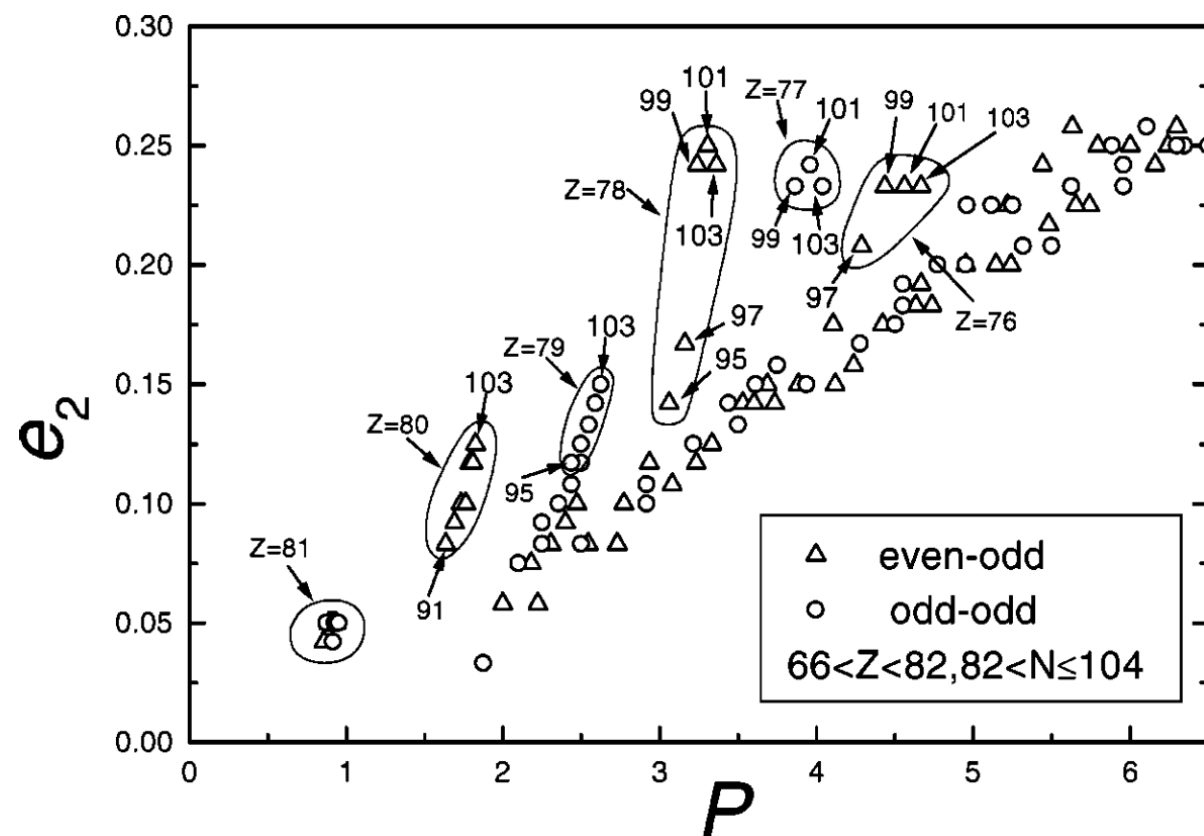


$(\alpha N_p + \beta N_n)$ 关系



	σ_R (fm)	N_R
(a)	0.0073	24
(b)	0.0042	17
(c)	0.0039	28
(d)	0.0045	133
(e)	0.0026	38
(f)	0.0072	47

$(\alpha N_p + \beta N_n)$ 关系



$$P = \frac{N_p N_n}{N_p + N_n}$$



PART
04

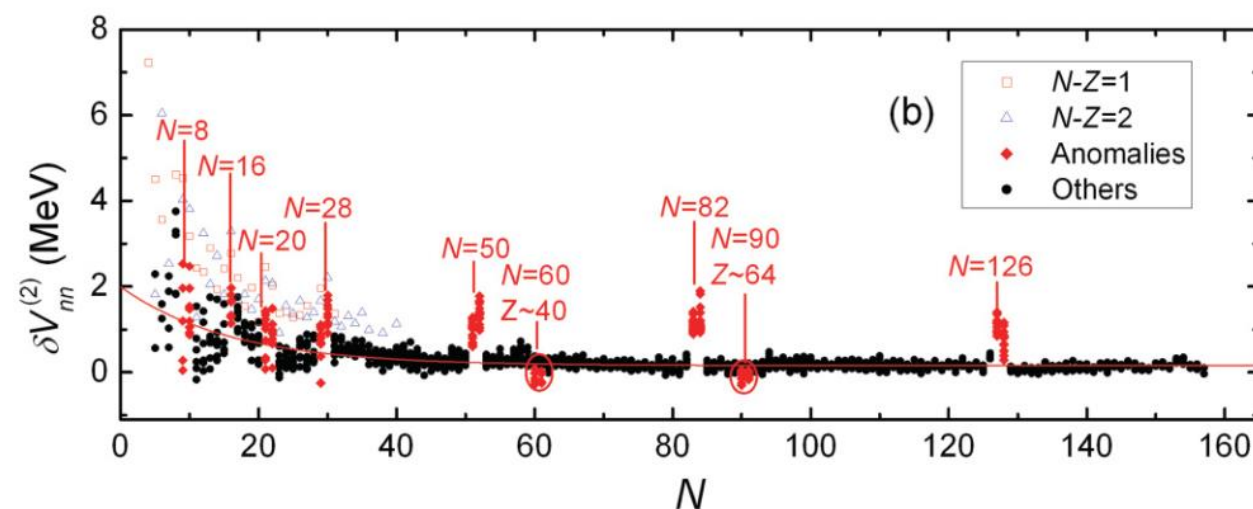
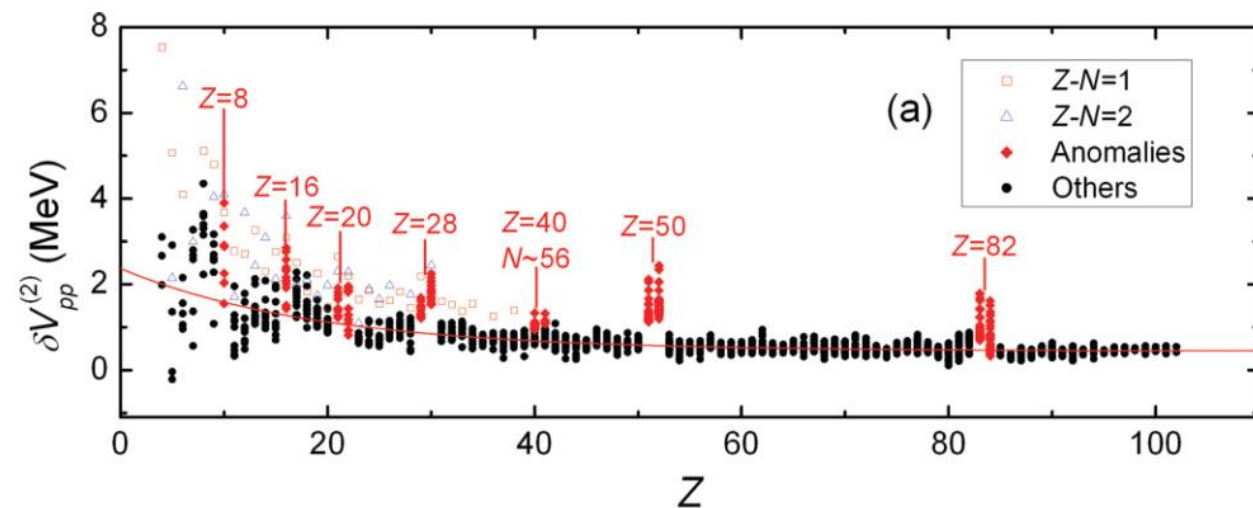
δR_{nn} & δR_{pp} 关系

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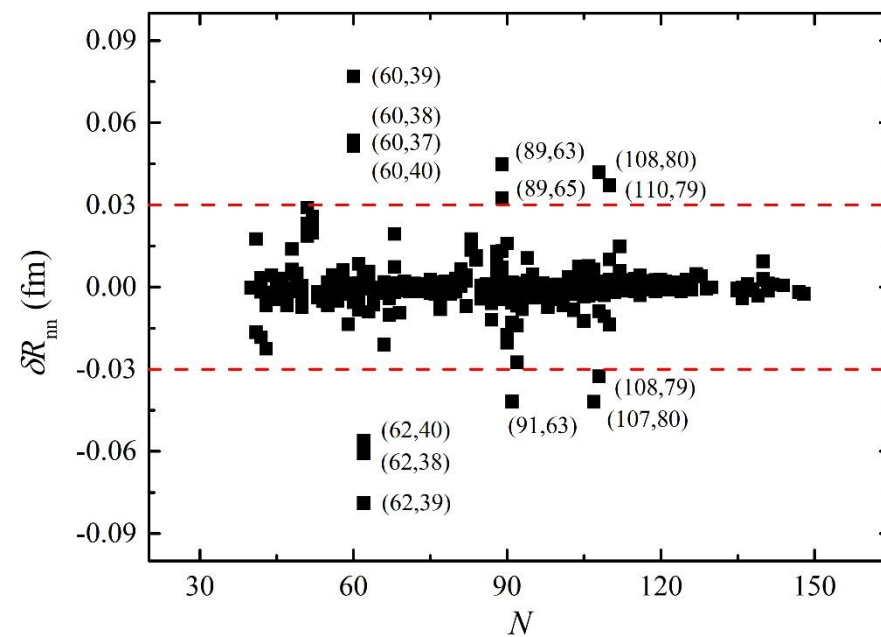
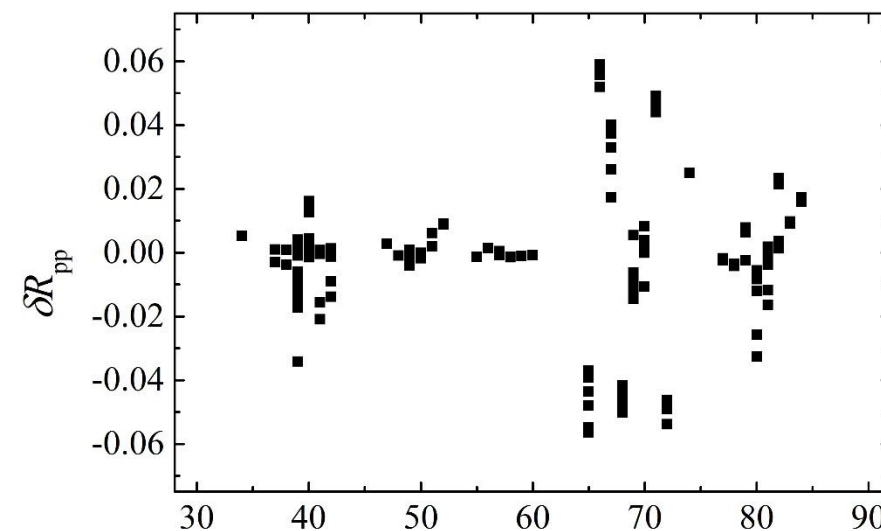
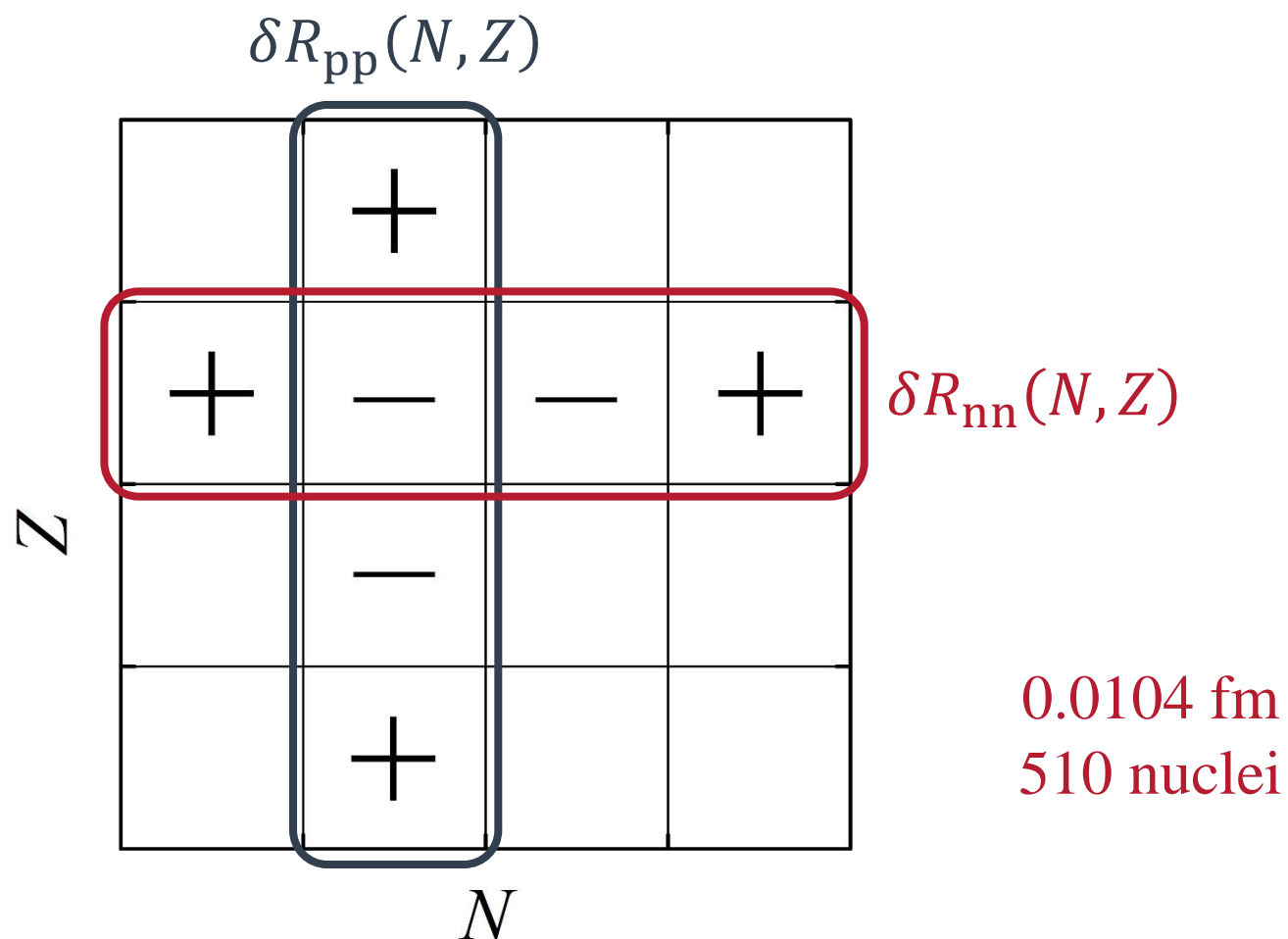
- “nonpairing” interaction between the last two protons / neutrons

$$\begin{aligned} \delta V_{pp}^{(2)}(Z-1, Z; N) \\ = \frac{1}{2} [-B(N, Z) + B(N, Z-1) \\ + B(N, Z-2) - B(N, Z-3)] \end{aligned}$$

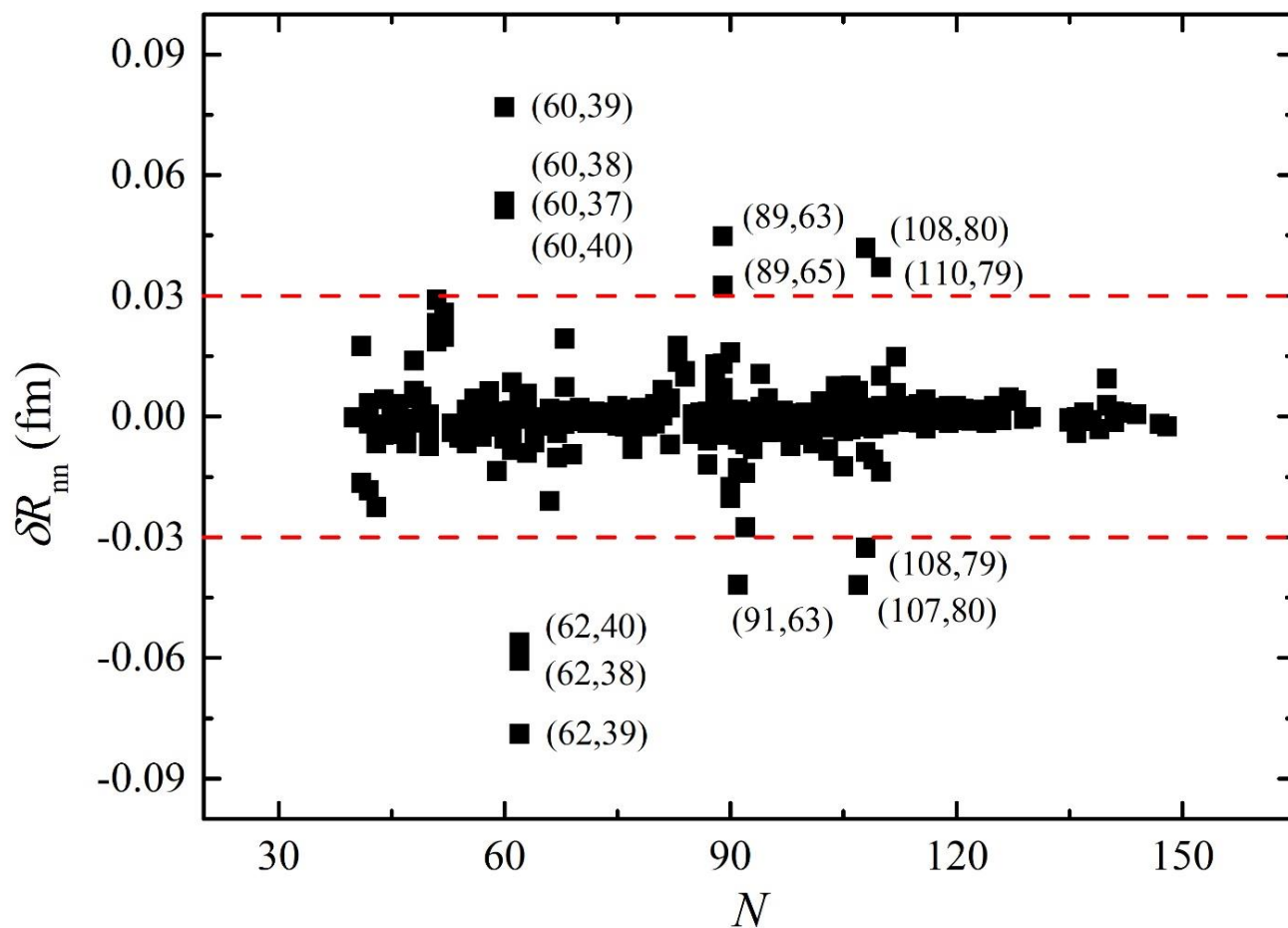
$$\begin{aligned} \delta V_{nn}^{(2)}(N-1, N; Z) \\ = \frac{1}{2} [-B(N, Z) + B(N-1, Z) \\ + B(N-2, Z) - B(N-3, Z)] \end{aligned}$$



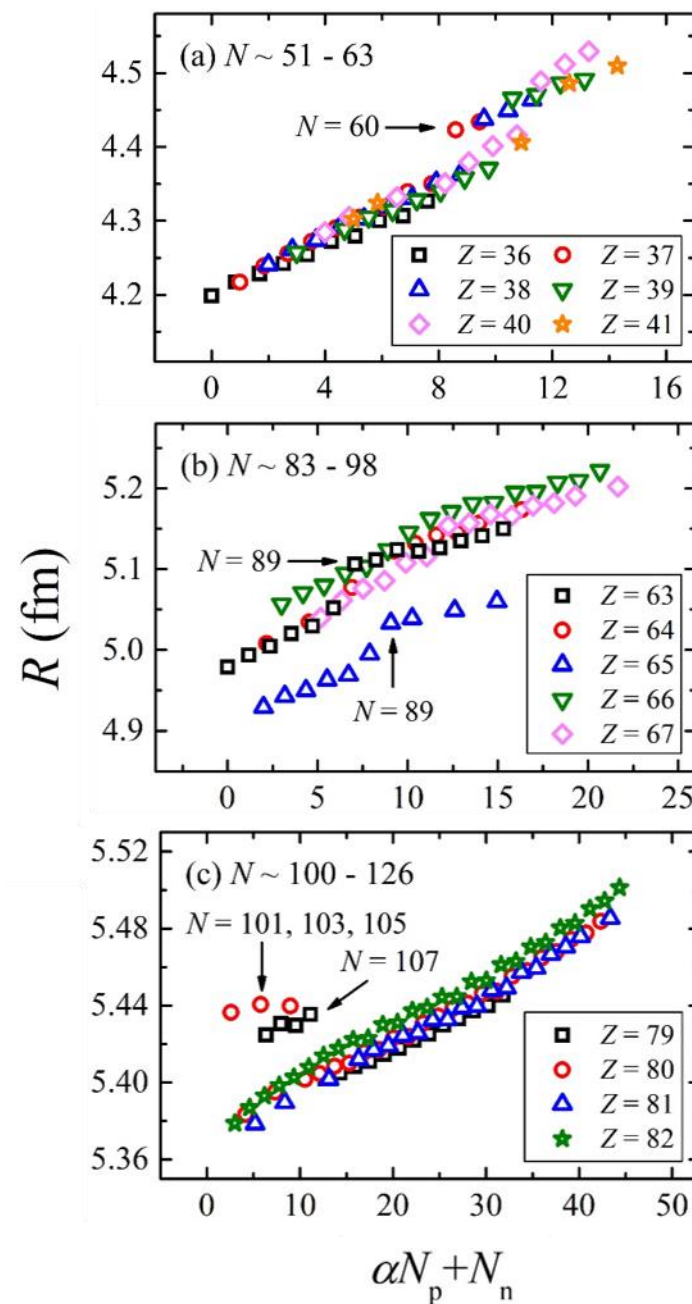
δR_{nn} & δR_{pp} 关系



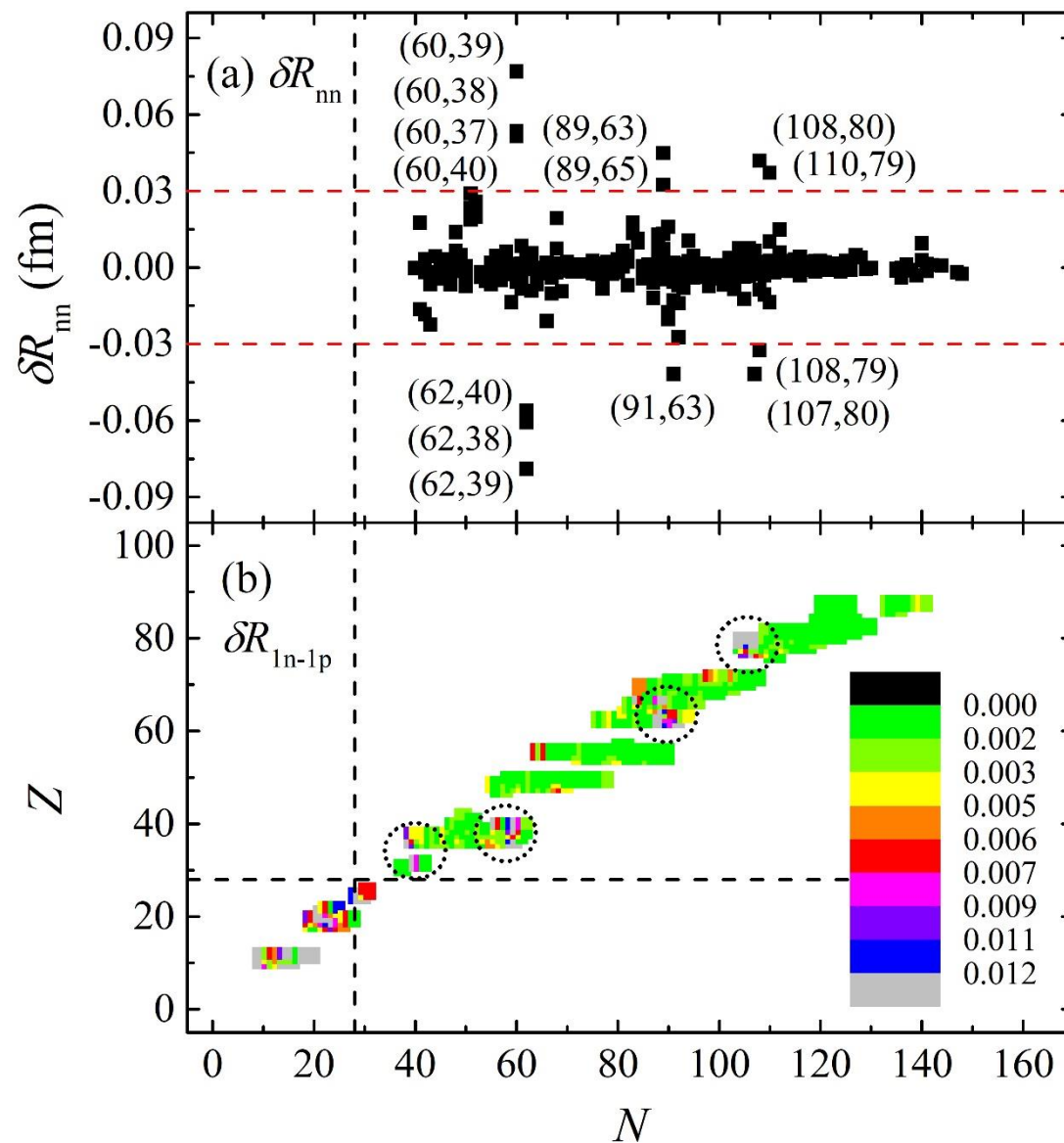
δR_{nn} & δR_{pp} 关系



0.0059 fm



δR_{nn} & δR_{pp} 关系





Summary

- δR_{1n-1p} 关系误差非常小，大部分偏差小于 0.003 fm
- δR_{nn} 关系的精度和 δR_{in-jp} 相近
- R 在部分区域与 $(\alpha N_p + \beta N_n)$ 有良好的线性关系，能体现结构变化



谢谢!