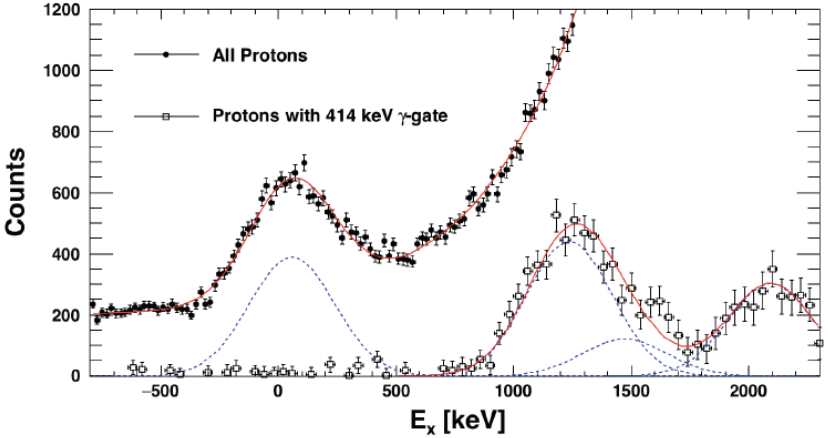
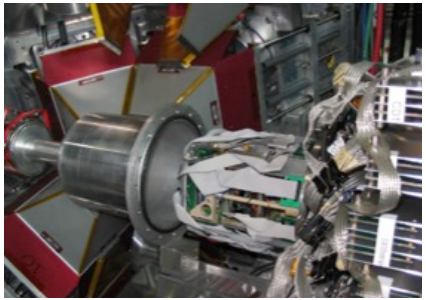
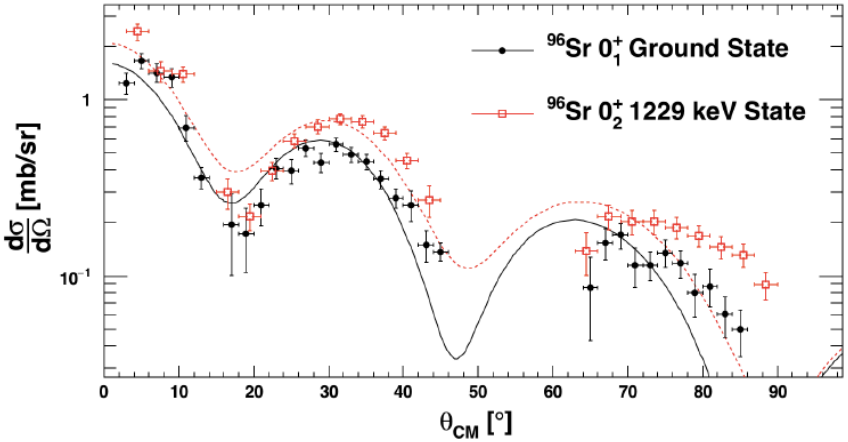
Shape coexistence around *N*=60

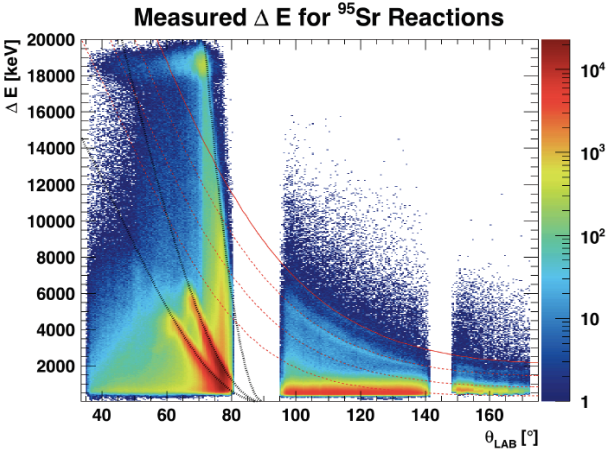
S. Cruz, P.C. Bender, R. Kruecken, K. Wimmer *et al.*

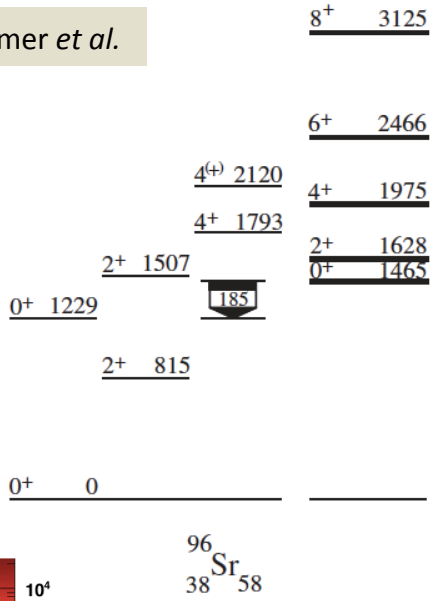
d(^{95}Sr,p)^{96}Sr, 5.4 MeV/u, ~10^{7}pps
TIGRESS+SHARC



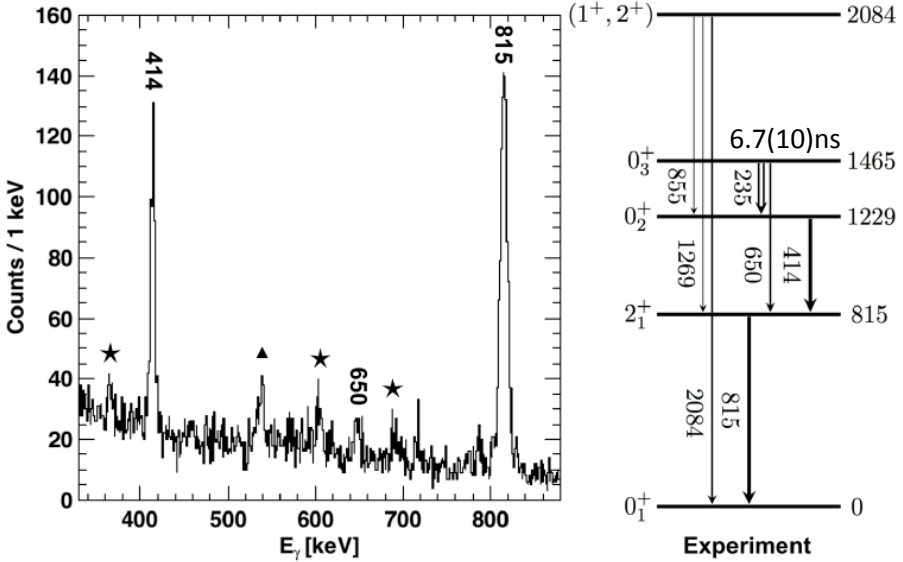




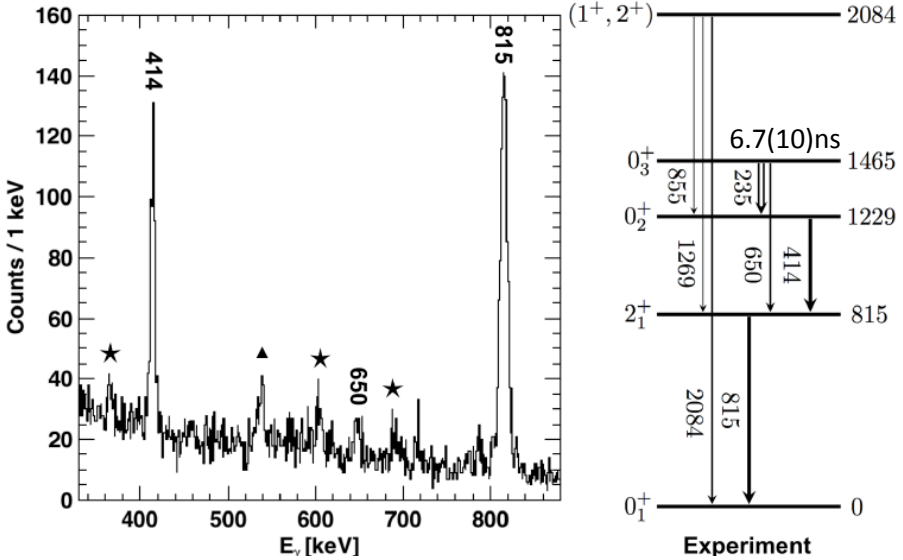




Shape coexistence around *N*=60



Shape coexistence around *N*=60



$$\rho^2(E0) = \left(\frac{3}{4\pi}\right)^2 Z^2 a^2 (1-a^2)\left[\Delta(\beta^2)\right]^2$$

a^2=0.40(14) and β_{def}=0.31(3), V_{mix} = 113keV

Shell model, proton valence space:
glek a: protons inert in $[1p_{3/2}]^4$
glek b: excitations allowed to $[1p_{3/2}]^2[1p_{1/2}]^2$
glek c: $0g_{9/2}$ allowed (max 2)

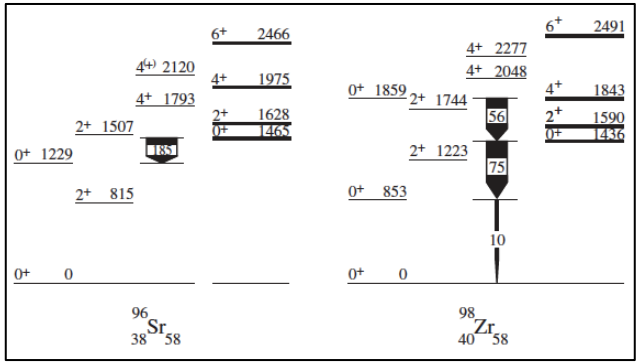
Calculations work well for C^2S in d(^{94}Sr,p).

TABLE I: Comparison of experimental to calculated spectroscopic factors (C^2S) for 0^+ states in ^{96}Sr populated via the d(^{95}Sr,p) reaction (more details in the text).

Exp.		Unmixed		*glek* ⓐ		*glek* ⓑ		*glek* ⓒ	
E_x [keV]	C^2S	E_x [keV]	C^2S	E_x [keV]	C^2S	E_x [keV]	C^2S	E_x [keV]	C^2S
0	0.19(3)	0	0.19(3)	0	1.742	0	1.575	0	1.455
1229	0.23(3)	1314	0	-	-	-	-	-	-
1465	0.34(13)	1380	0.56(23)	2271	0.056	1691	0.098	444	0.105

H. Mach et al., PRC 41, 226 (1990).

^{96}Sr $0_3 - 0_2$, $V_{mix} = 113keV$



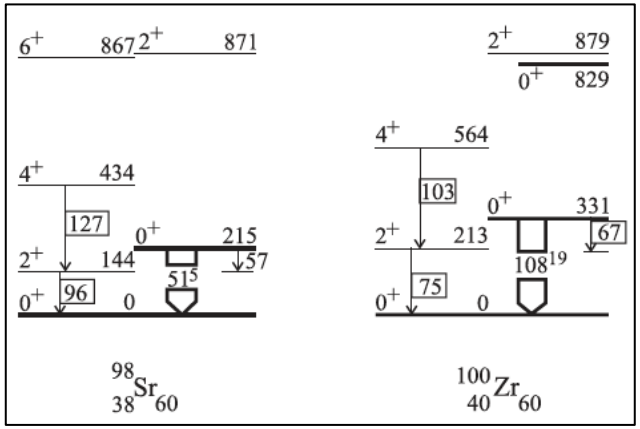


TABLE VI. Mixing strength (in units of keV) used in the description of energy, decay, and transfer reaction properties of coexisting structures.

Isotope	V_{mix}	Quantities fitted	Reference
^{72}Kr	310	E	Becker *et al.*, 1999; Korten, 2001; Bouchez *et al.*, 2003
^{74}Kr	340	E	Becker *et al.*, 1999; Korten, 2001; Bouchez *et al.*, 2003
^{76}Kr	250	E	Becker *et al.*, 1999; Korten, 2001; Bouchez *et al.*, 2003
^{78}Kr	200	E	Becker *et al.*, 1999; Korten, 2001; Bouchez *et al.*, 2003
^{98}Sr	67	E, $B(E2)$, $\rho^2(E0)$	Mach *et al.*, 1989
	34	$B(E2)$, $\rho^2(E0)$	Wu, Hua, and Cline, 2003
^{100}Zr	115	E, $B(E2)$, $\rho^2(E0)$	Mach *et al.*, 1989
	88	$B(E2)$, $\rho^2(E0)$	Wu, Hua, and Cline, 2003
^{98}Mo	326	$B(M1)$	Rusev *et al.*, 2005
^{100}Mo	321	$B(M1)$	Rusev *et al.*, 2005
$^{112,114}Cd$	297	$\sigma(t, p)$	O'Donnell, Kotwal, and Fortune, 1988
^{152}Sm	310	$\rho^2(E0)$	Kulp *et al.*, 2007
^{176}Pt	180	E	Dracoulis *et al.*, 1986
^{178}Pt	210	E	Dracoulis *et al.*, 1986
^{180}Pt	220	E	Dracoulis *et al.*, 1986
^{182}Pt	230	E	Dracoulis *et al.*, 1986
^{184}Pt	240	E	Dracoulis *et al.*, 1986
^{186}Pt	220	E	Dracoulis *et al.*, 1986
^{188}Pt	400	E	Dracoulis *et al.*, 1986
^{192}Pb	52	$B(E2)$, $\rho^2(E0)$	Van Duppen, Huyse, and Wood, 1990
^{194}Pb	51	$B(E2)$, $\rho^2(E0)$	Van Duppen, Huyse, and Wood, 1990