SVM for pionless EFT

For the potential

$$V = C_2 \sum_{i<j} e^{-ar_{ij}^2} + C_3 \sum_{i<j} P_{\sigma_i \cdot \sigma_j} e^{-ar_{ij}^2} + D \sum_{cyc} \sum_{i<j<k} e^{-a(r_{ik}^2 + r_{jk}^2)}$$

The LECs of pionless EFT are

$\Lambda^{(1)}$	C_1	C_3	D
2	-123.6692562	-18.69857216	65.66539381
4	-468.6906128	-36.47987366	661.4836412
6	-1036.326942	-54.26539235	2586.139045

$^{(1)}a = \Lambda^2/4$

The results from "$mySVMxyzIBC$ programe are

system	Λ	Energy (Mev)	Other code	Exprimental
deuteron	2	-2.224	-2.2245	-2.22486
deuteron	4	-2.202	-2.2245	-2.22486
deuteron	6	-1.924	-2.2245	-2.22486
triton	2	-8.471	-8.482	-8.481821
triton	4	-8.345	-8.482	-8.481821
triton	6	-8.155	-8.482	-8.481821
helium4	2	-23.71	-23.71	$-28.3^{(1)}$
helium4	4	-23.61	-23.91	$-28.3^{(1)}$
helium4	6	-24.11	-25.33	$-28.3^{(1)}$

$^{(1)}$ Extrapolation to $\Lambda \to \infty$ gives $E = 28 \pm 2$

It's possible to wait longer for better convergence...

The input files for the Deuteron, Triton, and Helium4 are in the input folder. The parameter eB (electron charge multiplied by the magnetic field) is a new parameter in the input files and now it set to zero.