

“Stability” plot

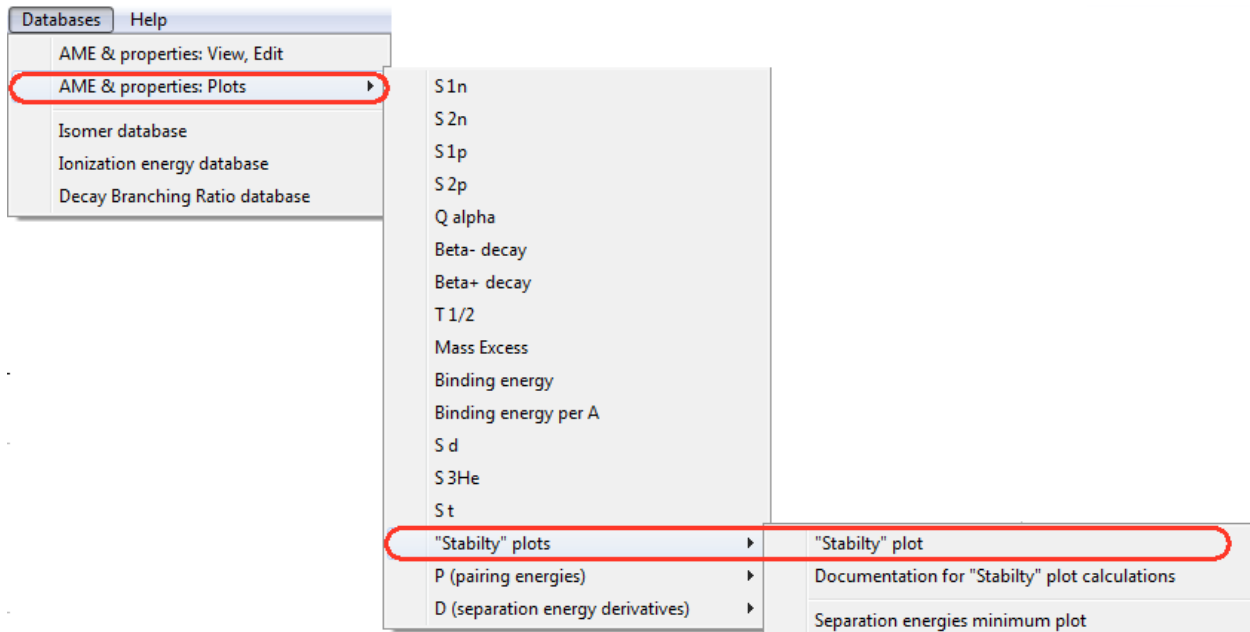
Version 9.8.113 from 08/27/2014

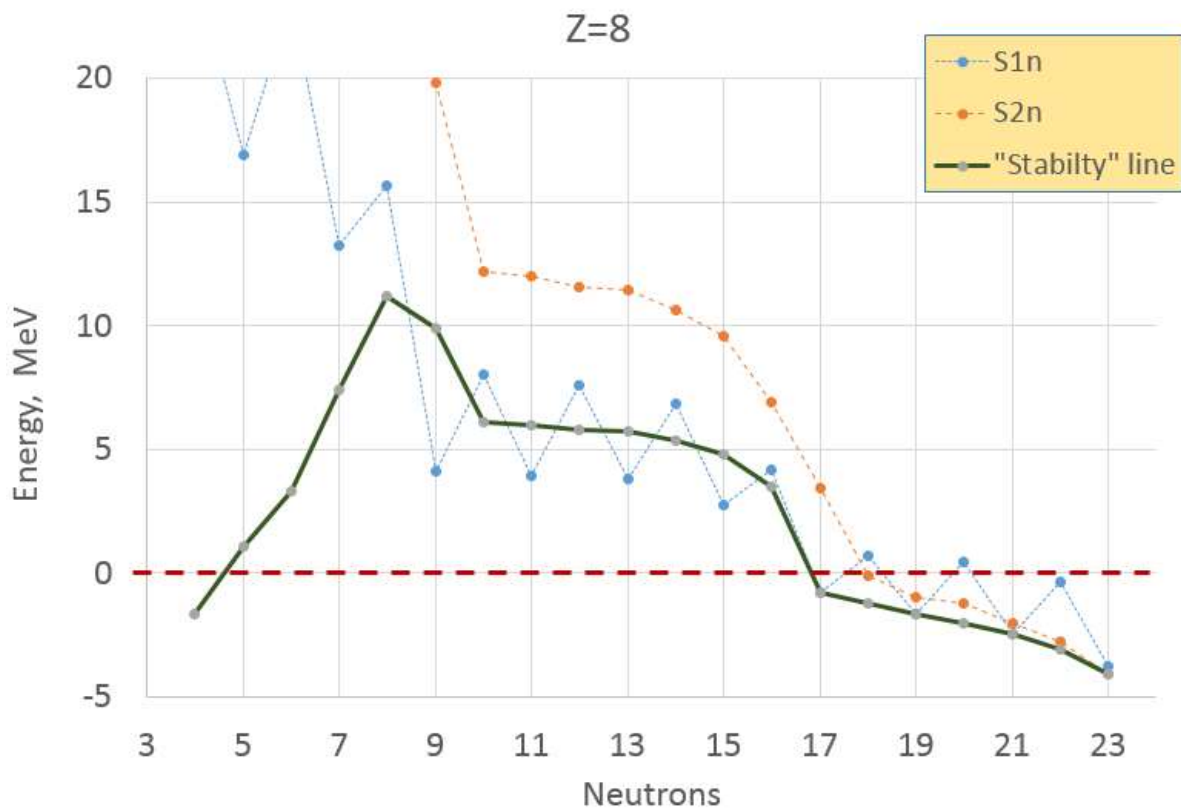
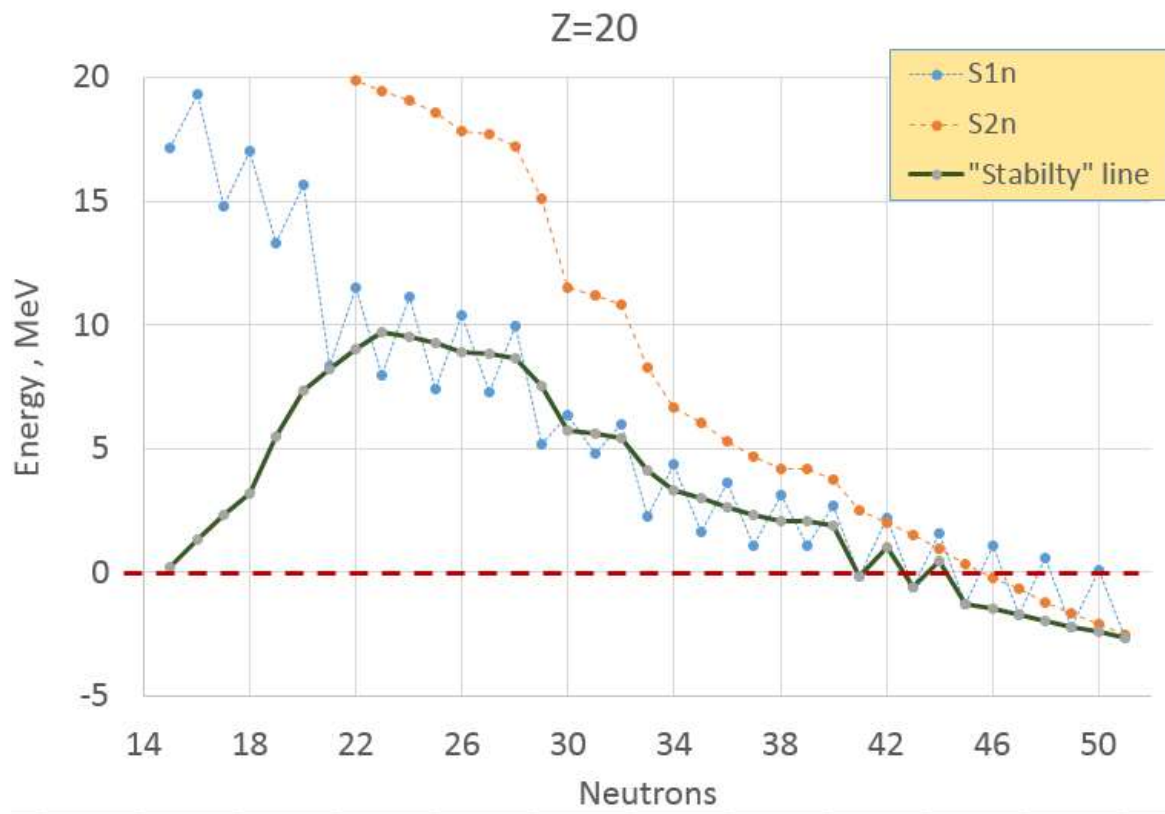
(Modified: version 10.1.71 from 01/04/2018)

The Purpose is to deduce and plot a minimum value from the set of S1n, S2n, S1p, S2p, FissionBarrier in order to

- Show particle bound isotopes
- Avoid “saw” structure due to odd-even corrections in separation energy

Fission barrier is a maximum value obtained from Fission barrier models in LISE++, including experimental information. BarFac=1, L=0. Fission barrier is decrease by 1.0, roughly assuming that at Fission Barrier =1 a nucleus is not particle bound against fission





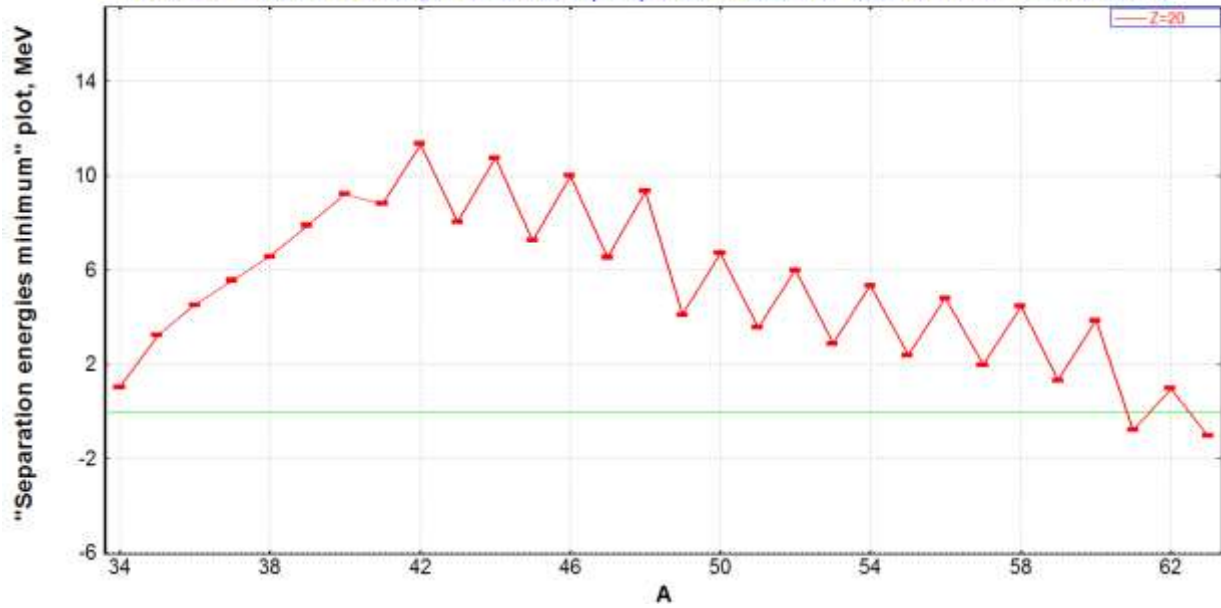
Z=20

"Separation energies minimum" plot

<Database: User's ME file (ddme2)>

Z=20

Minimum of separation energies (S_{1n} , S_{2n} , S_{1p} , S_{2p} , Barrier_{Fission} -1) (see v.9.8.113 documentation)

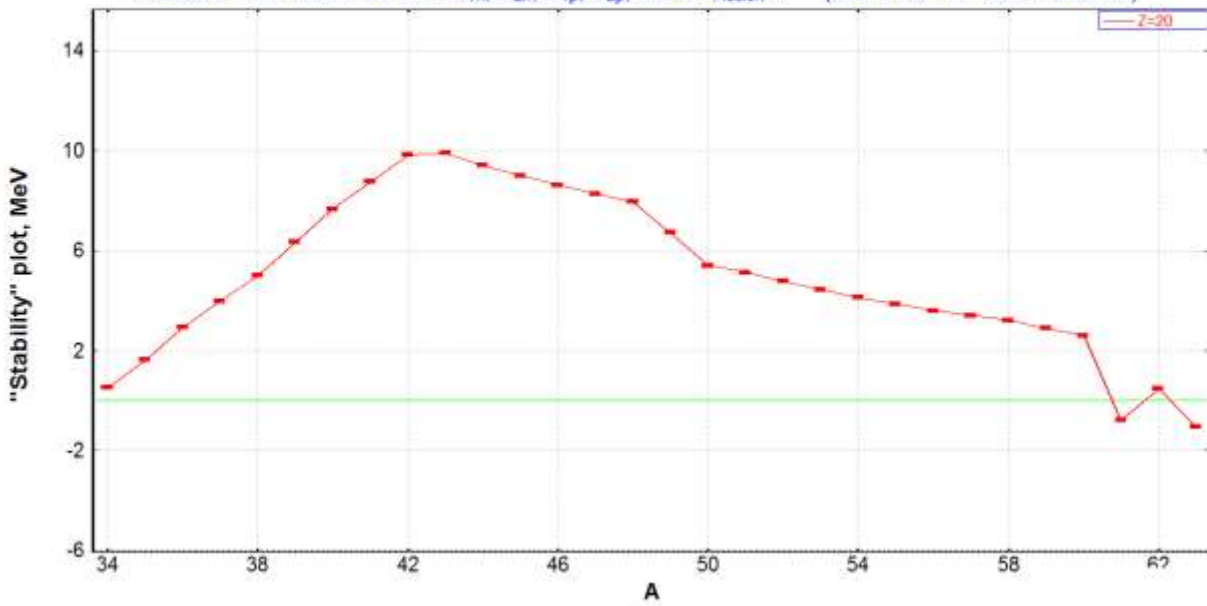


"Stability" plot

<Database: User's ME file (ddme2)>

Z=20

Reduced value based on from S_{1n} , S_{2n} , S_{1p} , S_{2p} , Barrier_{Fission} -1 (see v.9.8.113 documentation)



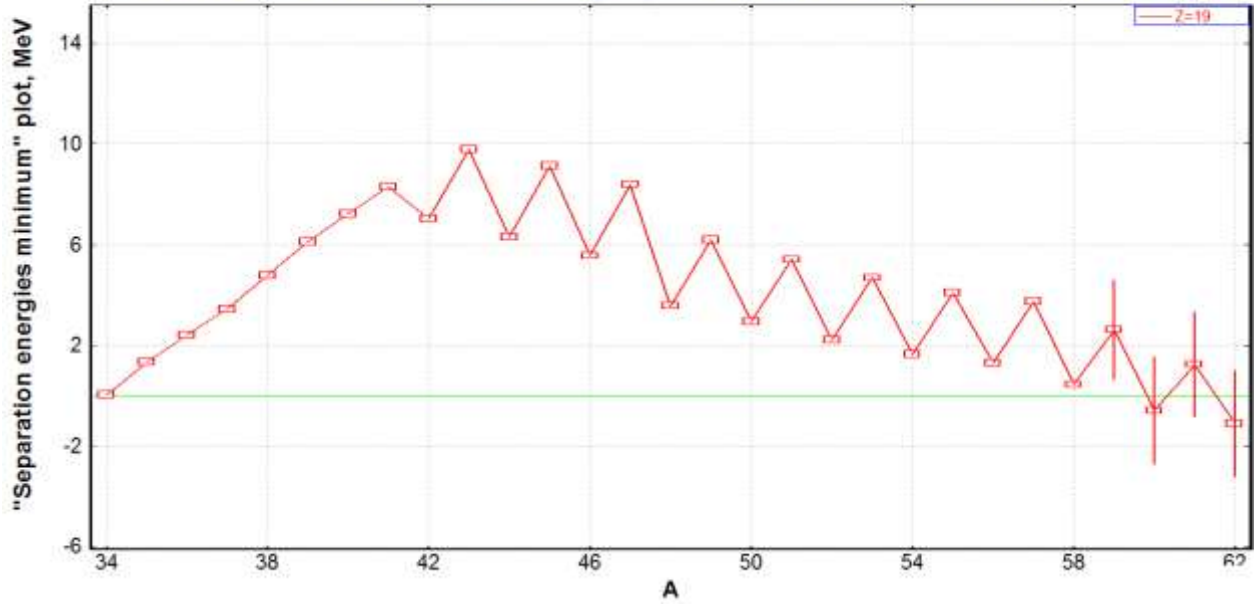
Z=19

"Separation energies minimum" plot

<Database: User's ME file (ddme2) + LDM2>

Z=19

Minimum of separation energies (S_{1n} , S_{2n} , S_{1p} , S_{2p} , $\text{Barrier}_{\text{Fission}} - 1$) (see v.9.8.113 documentation)

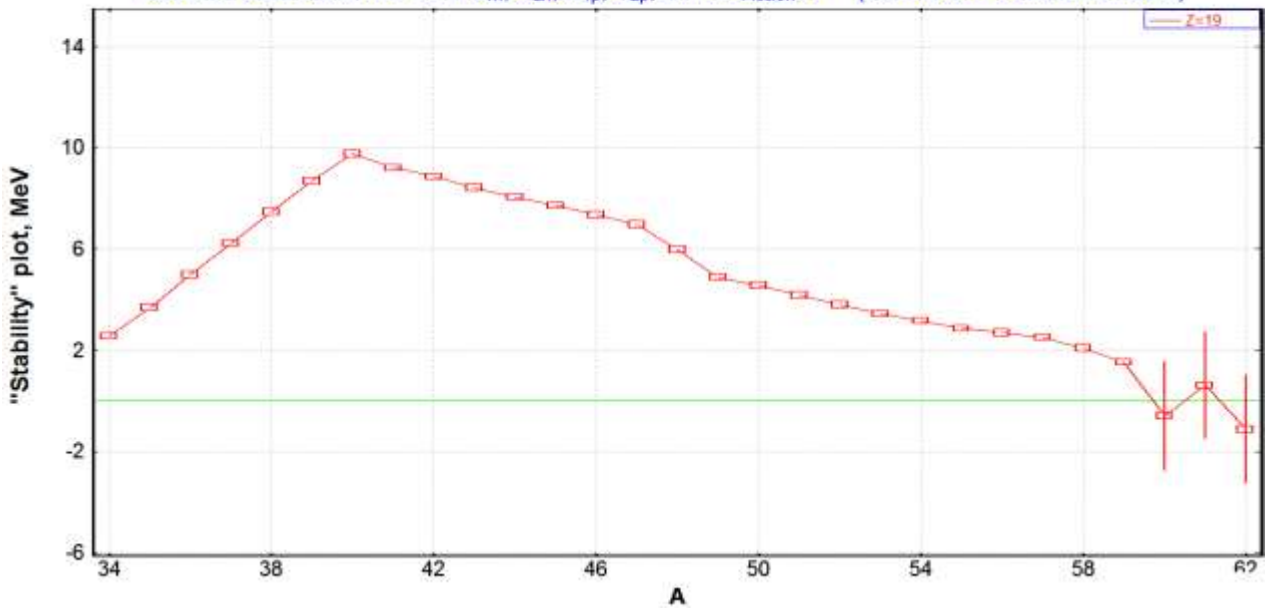


"Stability" plot

<Database: User's ME file (ddme2) + LDM2>

Z=19

Reduced value based on from S_{1n} , S_{2n} , S_{1p} , S_{2p} , $\text{Barrier}_{\text{Fission}} - 1$ (see v.9.8.113 documentation)



“Stability” plot algorithm

```
if(S2n >= 0 && S1n >=0) // S2n / 2
    Sn_min = S2n/2.;
else
    {
        if(S1n < S2n )
            Sn_min = S1n;
        else
            Sn_min = S2n;

        if(Ct->N_even())
            {
                Wp1 = W_ME(Ct->A()+1,Ct->Z());
                Wm1 = W_ME(Ct->A()-1,Ct->Z());
                Wm2 = W_ME(Ct->A()-2,Ct->Z());
                value = (Wm2-Wm1+W0-Wp1+2.*ME_1n)/2.;
                if(value < Sn_min) Sn_min = value;
            }
    }

//-----

if(S1p >= 0 && S2p >=0)
    Sp_min = S2p/2.;
else {
    if(S1p < S2p)
        Sp_min = S1p;
    else
        Sp_min = S2p;
}

//-----
if(Sp_min < Sn_min)    value = Sp_min;
else                  value = Sn_min;

if(FisBarrier < value) value = FisBarrier;
```

