Function to be plotted:

$$E = A_{-}\left[-2\sqrt{rt(2I-r)(2S-t)} + \frac{I-1}{2S}t + \frac{S-1}{2I}r + \frac{rt}{4IS}\right]. \tag{1}$$

Variables: r and t

angular momenta: I and S

what do we need:

The minima points (r,t) of the function E/A_{-} for several pairs (I,S):

(I,S) = (1,1), (2,2), (3,3),......,(10,10)

We need only the minima (r,t) for I=IS and I=1,2,3,....,10. One expects wonderful results.

De adaugat:

Derivatele de ordinul 1:

$$\begin{aligned}
\frac{\partial E}{\partial r} &= A_{-}\left[-2\sqrt{\frac{t(2S-t)}{r(2I-r)}}(I-r) + \frac{S}{2I} - \frac{1}{4IS}(2S-t)\right], \\
\frac{\partial E}{\partial t} &= A_{-}\left[-2\sqrt{\frac{r(2I-r)}{t(2S-t)}}(S-t) + \frac{I}{2S} - \frac{1}{4IS}(2I-r)\right].
\end{aligned} \tag{2}$$

Hessianul:

$$\begin{aligned}
\frac{\partial^2 E}{\partial r^2} &= 2A_{-}I^2\frac{\sqrt{t(2S-t)}}{\left(r(2I-r)\right)^{3/2}}, \\
\frac{\partial^2 E}{\partial r\partial t} &= A_{-}\left[\frac{1}{4IS} - 2\frac{(I-r)(S-t)}{\sqrt{rt(2I-r)(2S-t)}}\right], \\
\frac{\partial^2 E}{\partial t^2} &= 2A_{-}S^2\frac{\sqrt{r(2I-r)}}{\left(t(2S-t)\right)^{3/2}}, \\
\frac{\partial^2 E}{\partial t\partial r} &= \frac{\partial^2 E}{\partial r\partial t}.
\end{aligned} \tag{3}$$

Conditia de minim: Derivatele de ordinul 1 sa fie nule si Hessianul sa fie poziitiv.

Good luck!