Summation of the series for the classical action

We have tested several summation procedures based on different variants of Padé - Hermite approximants. Here, we describe the procedure that appears to yield the best results (in principle, still better procedures may exist but they are unknown to us).

To find the derivatives of the action, we define the polynomials *A*, *B*, *C*, and *D* of degree *M* obeying the relation:

$$A(\partial_x S)^2 + B(\partial_y S)^2 + C\,\partial_x S\partial_y S + D = o(\lambda^{4M+2}). \qquad (101)$$

The approximations to $\partial_x S$ and $\partial_y S$ are obtained from the equations:

$$\begin{aligned} &A(\partial_x S)^2 + B(\partial_y S)^2 + C\,\partial_x S\partial_y S + D = 0, \\ &(\partial_x S)^2 + (\partial_y S)^2 = 2(U - U_0). \end{aligned} \qquad (102)$$

If the turning point (*x*, *y*) lies at the isoenergetic surface $U = U_0$ then the solution of (102) is

$$\partial_x S = \pm i\partial_y S, \quad \left|\partial_x S\right|^4 = \frac{D^2}{(A-B)^2 + C^2}. \qquad (103)$$

The turning point was calculated by minimization of $\left|\partial_x S\right|$.

Another variant of Padé - Hermite approximants was constructed to find the action at the turning point. The polynomials A', B', C', and D' of degree M are defined by the relation:

$$A'\partial_x S + B'\partial_y S + C'S + D' = o(\lambda^{4M+2}), \tag{104}$$

and the action at the turning point was calculated by the formula $S_0 = -D'/C'$. The results for the case $F = 0.15$ and $B = 0.2$ are shown in the table:

M	S_0

1	0.398
2	0.310
3	0.399 271
4	0.400 728
5	0.401 231
6	0.401 133
7	0.401 150
8	0.401 127 0
9	0.401 126 879