Target equation:

$$-ia_1u^{(1,0)}(x,t)+a_{10}u^{(10,0)}(x,t)-ia_{11}u^{(11,0)}(x,t)+a_{12}u^{(12,0)}(x,t)-ia_{13}u^{(13,0)}(x,t)+a_{14}u^{(14,0)}(x,t)-$$
$$ia_{15}u^{(15,0)}(x,t)+a_{16}u^{(16,0)}(x,t)-ia_{17}u^{(17,0)}(x,t)+a_{18}u^{(18,0)}(x,t)-ia_{19}u^{(19,0)}(x,t)+a_2u^{(2,0)}(x,t)+$$
$$a_{20}u^{(20,0)}(x,t)-ia_{21}u^{(21,0)}(x,t)+a_{22}u^{(22,0)}(x,t)-ia_{23}u^{(23,0)}(x,t)+a_{24}u^{(24,0)}(x,t)-ia_{25}u^{(25,0)}(x,t)+$$
$$a_{26}u^{(26,0)}(x,t)-ia_{27}u^{(27,0)}(x,t)+a_{28}u^{(28,0)}(x,t)-ia_{29}u^{(29,0)}(x,t)-ia_3u^{(3,0)}(x,t)+a_{30}u^{(30,0)}(x,t)+$$
$$a_4u^{(4,0)}(x,t)-ia_5u^{(5,0)}(x,t)+a_6u^{(6,0)}(x,t)-ia_7u^{(7,0)}(x,t)+a_8u^{(8,0)}(x,t)-ia_9u^{(9,0)}(x,t)-bu(x,t)\left|u(x,t)\right|^2+$$
$$iu^{(0,1)}(x,t)=0$$

Substitutions:

$$\mathrm{N}=15$$
$$u(x,t)\to y(z)e^{i(kx-\omega t)}$$
$$z\to x-\mathrm{C0}t$$
$$y(z)\to AR(z)^{15}$$
$$R'(z)^2=R(z)^2\left(1-\chi R(z)^2\right)$$

Imaginary part of equation after substitutions:

$$-142506a_{30}y^{(5)}(z)k^{25}+118755a_{29}y^{(5)}(z)k^{24}+98280a_{28}y^{(5)}(z)k^{23}+2035800a_{30}y^{(7)}(z)k^{23}-80730a_{27}y^{(5)}(z)k^{22}-$$
$$1560780a_{29}y^{(7)}(z)k^{22}-65780a_{26}y^{(5)}(z)k^{21}-1184040a_{28}y^{(7)}(z)k^{21}-14307150a_{30}y^{(9)}(z)k^{21}+53130a_{25}y^{(5)}(z)k^{20}$$
$$888030a_{27}y^{(7)}(z)k^{20}+10015005a_{29}y^{(9)}(z)k^{20}+42504a_{24}y^{(5)}(z)k^{19}+657800a_{26}y^{(7)}(z)k^{19}+6906900a_{28}y^{(9)}(z)k^{19}$$
$$54627300a_{30}y^{(11)}(z)k^{19}-33649a_{23}y^{(5)}(z)k^{18}-480700a_{25}y^{(7)}(z)k^{18}-4686825a_{27}y^{(9)}(z)k^{18}-34597290a_{29}y^{(11)}(z$$
$$26334a_{22}y^{(5)}(z)k^{17}-346104a_{24}y^{(7)}(z)k^{17}-3124550a_{26}y^{(9)}(z)k^{17}-21474180a_{28}y^{(11)}(z)k^{17}-119759850a_{30}y^{(13)}($$
$$20349a_{21}y^{(5)}(z)k^{16}+245157a_{23}y^{(7)}(z)k^{16}+2042975a_{25}y^{(9)}(z)k^{16}+13037895a_{27}y^{(11)}(z)k^{16}+67863915a_{29}y^{(13)}(z$$
$$15504a_{20}y^{(5)}(z)k^{15}+170544a_{22}y^{(7)}(z)k^{15}+1307504a_{24}y^{(9)}(z)k^{15}+7726160a_{26}y^{(11)}(z)k^{15}+37442160a_{28}y^{(13)}(z)$$
$$155117520a_{30}y^{(15)}(z)k^{15}-11628a_{19}y^{(5)}(z)k^{14}-116280a_{21}y^{(7)}(z)k^{14}-817190a_{23}y^{(9)}(z)k^{14}-4457400a_{25}y^{(11)}(z)$$
$$20058300a_{27}y^{(13)}(z)k^{14}-77558760a_{29}y^{(15)}(z)k^{14}-8568a_{18}y^{(5)}(z)k^{13}-77520a_{20}y^{(7)}(z)k^{13}-497420a_{22}y^{(9)}(z)k^{1}$$
$$2496144a_{24}y^{(11)}(z)k^{13}-10400600a_{26}y^{(13)}(z)k^{13}-37442160a_{28}y^{(15)}(z)k^{13}-119759850a_{30}y^{(17)}(z)k^{13}+$$
$$6188a_{17}y^{(5)}(z)k^{12}+50388a_{19}y^{(7)}(z)k^{12}+293930a_{21}y^{(9)}(z)k^{12}+1352078a_{23}y^{(11)}(z)k^{12}+5200300a_{25}y^{(13)}(z)k^{12}+$$
$$17383860a_{27}y^{(15)}(z)k^{12}+51895935a_{29}y^{(17)}(z)k^{12}+4368a_{16}y^{(5)}(z)k^{11}+31824a_{18}y^{(7)}(z)k^{11}+167960a_{20}y^{(9)}(z)k^{1}$$
$$705432a_{22}y^{(11)}(z)k^{11}+2496144a_{24}y^{(13)}(z)k^{11}+7726160a_{26}y^{(15)}(z)k^{11}+21474180a_{28}y^{(17)}(z)k^{11}+$$
$$54627300a_{30}y^{(19)}(z)k^{11}-3003a_{15}y^{(5)}(z)k^{10}-19448a_{17}y^{(7)}(z)k^{10}-92378a_{19}y^{(9)}(z)k^{10}-352716a_{21}y^{(11)}(z)k^{10}-$$
$$1144066a_{23}y^{(13)}(z)k^{10}-3268760a_{25}y^{(15)}(z)k^{10}-8436285a_{27}y^{(17)}(z)k^{10}-20030010a_{29}y^{(19)}(z)k^{10}-$$
$$2002a_{14}y^{(5)}(z)k^{9}-11440a_{16}y^{(7)}(z)k^{9}-48620a_{18}y^{(9)}(z)k^{9}-167960a_{20}y^{(11)}(z)k^{9}-497420a_{22}y^{(13)}(z)k^{9}-$$
$$1307504a_{24}y^{(15)}(z)k^{9}-3124550a_{26}y^{(17)}(z)k^{9}-6906900a_{28}y^{(19)}(z)k^{9}-14307150a_{30}y^{(21)}(z)k^{9}+$$
$$1287a_{13}y^{(5)}(z)k^{8}+6435a_{15}y^{(7)}(z)k^{8}+24310a_{17}y^{(9)}(z)k^{8}+75582a_{19}y^{(11)}(z)k^{8}+203490a_{21}y^{(13)}(z)k^{8}+$$
$$490314a_{23}y^{(15)}(z)k^{8}+1081575a_{25}y^{(17)}(z)k^{8}+2220075a_{27}y^{(19)}(z)k^{8}+4292145a_{29}y^{(21)}(z)k^{8}+792a_{12}y^{(5)}(z)k^{7}+$$
$$3432a_{14}y^{(7)}(z)k^{7}+11440a_{16}y^{(9)}(z)k^{7}+31824a_{18}y^{(11)}(z)k^{7}+77520a_{20}y^{(13)}(z)k^{7}+170544a_{22}y^{(15)}(z)k^{7}+$$

$346104a_{24}y^{(17)}(z)k^7+657800a_{26}y^{(19)}(z)k^7+1184040a_{28}y^{(21)}(z)k^7+2035800a_{30}y^{(23)}(z)k^7-462a_{11}y^{(5)}(z)k^6-$
$1716a_{13}y^{(7)}(z)k^6-5005a_{15}y^{(9)}(z)k^6-12376a_{17}y^{(11)}(z)k^6-27132a_{19}y^{(13)}(z)k^6-54264a_{21}y^{(15)}(z)k^6-$
$100947a_{23}y^{(17)}(z)k^6-177100a_{25}y^{(19)}(z)k^6-296010a_{27}y^{(21)}(z)k^6-475020a_{29}y^{(23)}(z)k^6-252a_{10}y^{(5)}(z)k^5-$
$792a_{12}y^{(7)}(z)k^5-2002a_{14}y^{(9)}(z)k^5-4368a_{16}y^{(11)}(z)k^5-8568a_{18}y^{(13)}(z)k^5-15504a_{20}y^{(15)}(z)k^5-$
$26334a_{22}y^{(17)}(z)k^5-42504a_{24}y^{(19)}(z)k^5-65780a_{26}y^{(21)}(z)k^5-98280a_{28}y^{(23)}(z)k^5-142506a_{30}y^{(25)}(z)k^5+$
$126a_9y^{(5)}(z)k^4+330a_{11}y^{(7)}(z)k^4+715a_{13}y^{(9)}(z)k^4+1365a_{15}y^{(11)}(z)k^4+2380a_{17}y^{(13)}(z)k^4+$
$3876a_{19}y^{(15)}(z)k^4+5985a_{21}y^{(17)}(z)k^4+8855a_{23}y^{(19)}(z)k^4+12650a_{25}y^{(21)}(z)k^4+17550a_{27}y^{(23)}(z)k^4+$
$23751a_{29}y^{(25)}(z)k^4+56a_8y^{(5)}(z)k^3+120a_{10}y^{(7)}(z)k^3+220a_{12}y^{(9)}(z)k^3+364a_{14}y^{(11)}(z)k^3+560a_{16}y^{(13)}(z)k^3+$
$816a_{18}y^{(15)}(z)k^3+1140a_{20}y^{(17)}(z)k^3+1540a_{22}y^{(19)}(z)k^3+2024a_{24}y^{(21)}(z)k^3+2600a_{26}y^{(23)}(z)k^3+$
$3276a_{28}y^{(25)}(z)k^3+4060a_{30}y^{(27)}(z)k^3-21a_7y^{(5)}(z)k^2-36a_9y^{(7)}(z)k^2-55a_{11}y^{(9)}(z)k^2-78a_{13}y^{(11)}(z)k^2-$
$105a_{15}y^{(13)}(z)k^2-136a_{17}y^{(15)}(z)k^2-171a_{19}y^{(17)}(z)k^2-210a_{21}y^{(19)}(z)k^2-253a_{23}y^{(21)}(z)k^2-$
$300a_{25}y^{(23)}(z)k^2-351a_{27}y^{(25)}(z)k^2-406a_{29}y^{(27)}(z)k^2-6a_6y^{(5)}(z)k-8a_8y^{(7)}(z)k-10a_{10}y^{(9)}(z)k-$
$12a_{12}y^{(11)}(z)k-14a_{14}y^{(13)}(z)k-16a_{16}y^{(15)}(z)k-18a_{18}y^{(17)}(z)k-20a_{20}y^{(19)}(z)k-22a_{22}y^{(21)}(z)k-$
$24a_{24}y^{(23)}(z)k-26a_{26}y^{(25)}(z)k-28a_{28}y^{(27)}(z)k-30a_{30}y^{(29)}(z)k+(a_1-\mathrm{C0}+k\,(k\,(k\,(4a_4+k\,(5a_5+k\,(k\,(k\,(8a$
$(a_3+k\,(k\,(k\,(20a_6+k\,(35a_7+k\,(k\,(k\,(120a_{10}+k\,(165a_{11}+k\,(k\,(k\,(364a_{14}+k\,(455a_{15}+k\,(k\,(k\,(816a_{18}+k$
$a_5y^{(5)}(z)+a_7y^{(7)}(z)+a_9y^{(9)}(z)+a_{11}y^{(11)}(z)+a_{13}y^{(13)}(z)+a_{15}y^{(15)}(z)+a_{17}y^{(17)}(z)+a_{19}y^{(19)}(z)+$
$a_{21}y^{(21)}(z)+a_{23}y^{(23)}(z)+a_{25}y^{(25)}(z)+a_{27}y^{(27)}(z)+a_{29}y^{(29)}(z)=0$

Real part of equation after substitutions:

$-27405a_{30}y^{(4)}(z)k^{26}+23751a_{29}y^{(4)}(z)k^{25}+20475a_{28}y^{(4)}(z)k^{24}+593775a_{30}y^{(6)}(z)k^{24}-17550a_{27}y^{(4)}(z)k^{23}-$
$475020a_{29}y^{(6)}(z)k^{23}-14950a_{26}y^{(4)}(z)k^{22}-376740a_{28}y^{(6)}(z)k^{22}-5852925a_{30}y^{(8)}(z)k^{22}+12650a_{25}y^{(4)}(z)k^{21}+$
$296010a_{27}y^{(6)}(z)k^{21}+4292145a_{29}y^{(8)}(z)k^{21}+10626a_{24}y^{(4)}(z)k^{20}+230230a_{26}y^{(6)}(z)k^{20}+3108105a_{28}y^{(8)}(z)k^{20}+$
$30045015a_{30}y^{(10)}(z)k^{20}-8855a_{23}y^{(4)}(z)k^{19}-177100a_{25}y^{(6)}(z)k^{19}-2220075a_{27}y^{(8)}(z)k^{19}-20030010a_{29}y^{(10)}(z)$
$7315a_{22}y^{(4)}(z)k^{18}-134596a_{24}y^{(6)}(z)k^{18}-1562275a_{26}y^{(8)}(z)k^{18}-13123110a_{28}y^{(10)}(z)k^{18}-86493225a_{30}y^{(12)}(z)$
$5985a_{21}y^{(4)}(z)k^{17}+100947a_{23}y^{(6)}(z)k^{17}+1081575a_{25}y^{(8)}(z)k^{17}+8436285a_{27}y^{(10)}(z)k^{17}+51895935a_{29}y^{(12)}(z)k$
$4845a_{20}y^{(4)}(z)k^{16}+74613a_{22}y^{(6)}(z)k^{16}+735471a_{24}y^{(8)}(z)k^{16}+5311735a_{26}y^{(10)}(z)k^{16}+30421755a_{28}y^{(12)}(z)k^{16}-$
$145422675a_{30}y^{(14)}(z)k^{16}-3876a_{19}y^{(4)}(z)k^{15}-54264a_{21}y^{(6)}(z)k^{15}-490314a_{23}y^{(8)}(z)k^{15}-3268760a_{25}y^{(10)}(z)k^{1}$
$17383860a_{27}y^{(12)}(z)k^{15}-77558760a_{29}y^{(14)}(z)k^{15}-3060a_{18}y^{(4)}(z)k^{14}-38760a_{20}y^{(6)}(z)k^{14}-319770a_{22}y^{(8)}(z)k^{1}$
$1961256a_{24}y^{(10)}(z)k^{14}-9657700a_{26}y^{(12)}(z)k^{14}-40116600a_{28}y^{(14)}(z)k^{14}-145422675a_{30}y^{(16)}(z)k^{14}+$
$2380a_{17}y^{(4)}(z)k^{13}+27132a_{19}y^{(6)}(z)k^{13}+203490a_{21}y^{(8)}(z)k^{13}+1144066a_{23}y^{(10)}(z)k^{13}+5200300a_{25}y^{(12)}(z)k^{13}+$
$20058300a_{27}y^{(14)}(z)k^{13}+67863915a_{29}y^{(16)}(z)k^{13}+1820a_{16}y^{(4)}(z)k^{12}+18564a_{18}y^{(6)}(z)k^{12}+125970a_{20}y^{(8)}(z)k^{12}$
$646646a_{22}y^{(10)}(z)k^{12}+2704156a_{24}y^{(12)}(z)k^{12}+9657700a_{26}y^{(14)}(z)k^{12}+30421755a_{28}y^{(16)}(z)k^{12}+$
$86493225a_{30}y^{(18)}(z)k^{12}-1365a_{15}y^{(4)}(z)k^{11}-12376a_{17}y^{(6)}(z)k^{11}-75582a_{19}y^{(8)}(z)k^{11}-352716a_{21}y^{(10)}(z)k^{11}-$
$1352078a_{23}y^{(12)}(z)k^{11}-4457400a_{25}y^{(14)}(z)k^{11}-13037895a_{27}y^{(16)}(z)k^{11}-34597290a_{29}y^{(18)}(z)k^{11}-$
$1001a_{14}y^{(4)}(z)k^{10}-8008a_{16}y^{(6)}(z)k^{10}-43758a_{18}y^{(8)}(z)k^{10}-184756a_{20}y^{(10)}(z)k^{10}-646646a_{22}y^{(12)}(z)k^{10}-$

$$1961256a_{24}y^{(14)}(z)k^{10}-5311735a_{26}y^{(16)}(z)k^{10}-13123110a_{28}y^{(18)}(z)k^{10}-30045015a_{30}y^{(20)}(z)k^{10}+$$
$$715a_{13}y^{(4)}(z)k^9+5005a_{15}y^{(6)}(z)k^9+24310a_{17}y^{(8)}(z)k^9+92378a_{19}y^{(10)}(z)k^9+293930a_{21}y^{(12)}(z)k^9+$$
$$817190a_{23}y^{(14)}(z)k^9 + 2042975a_{25}y^{(16)}(z)k^9 + 4686825a_{27}y^{(18)}(z)k^9 + 10015005a_{29}y^{(20)}(z)k^9 +$$
$$495a_{12}y^{(4)}(z)k^8+3003a_{14}y^{(6)}(z)k^8+12870a_{16}y^{(8)}(z)k^8+43758a_{18}y^{(10)}(z)k^8+125970a_{20}y^{(12)}(z)k^8+$$
$$319770a_{22}y^{(14)}(z)k^8+735471a_{24}y^{(16)}(z)k^8+1562275a_{26}y^{(18)}(z)k^8+3108105a_{28}y^{(20)}(z)k^8+5852925a_{30}y^{(22)}(z)k$$
$$330a_{11}y^{(4)}(z)k^7-1716a_{13}y^{(6)}(z)k^7-6435a_{15}y^{(8)}(z)k^7-19448a_{17}y^{(10)}(z)k^7-50388a_{19}y^{(12)}(z)k^7-$$
$$116280a_{21}y^{(14)}(z)k^7-245157a_{23}y^{(16)}(z)k^7-480700a_{25}y^{(18)}(z)k^7-888030a_{27}y^{(20)}(z)k^7-1560780a_{29}y^{(22)}(z)k^7-$$
$$210a_{10}y^{(4)}(z)k^6 - 924a_{12}y^{(6)}(z)k^6 - 3003a_{14}y^{(8)}(z)k^6 - 8008a_{16}y^{(10)}(z)k^6 - 18564a_{18}y^{(12)}(z)k^6 -$$
$$38760a_{20}y^{(14)}(z)k^6-74613a_{22}y^{(16)}(z)k^6-134596a_{24}y^{(18)}(z)k^6-230230a_{26}y^{(20)}(z)k^6-376740a_{28}y^{(22)}(z)k^6-$$
$$593775a_{30}y^{(24)}(z)k^6 + 126a_9y^{(4)}(z)k^5 + 462a_{11}y^{(6)}(z)k^5 + 1287a_{13}y^{(8)}(z)k^5 + 3003a_{15}y^{(10)}(z)k^5 +$$
$$6188a_{17}y^{(12)}(z)k^5+11628a_{19}y^{(14)}(z)k^5+20349a_{21}y^{(16)}(z)k^5+33649a_{23}y^{(18)}(z)k^5+53130a_{25}y^{(20)}(z)k^5+$$
$$80730a_{27}y^{(22)}(z)k^5 + 118755a_{29}y^{(24)}(z)k^5 + 70a_8y^{(4)}(z)k^4 + 210a_{10}y^{(6)}(z)k^4 + 495a_{12}y^{(8)}(z)k^4 +$$
$$1001a_{14}y^{(10)}(z)k^4+1820a_{16}y^{(12)}(z)k^4+3060a_{18}y^{(14)}(z)k^4+4845a_{20}y^{(16)}(z)k^4+7315a_{22}y^{(18)}(z)k^4+$$
$$10626a_{24}y^{(20)}(z)k^4+14950a_{26}y^{(22)}(z)k^4+20475a_{28}y^{(24)}(z)k^4+27405a_{30}y^{(26)}(z)k^4-35a_7y^{(4)}(z)k^3-$$
$$84a_9y^{(6)}(z)k^3-165a_{11}y^{(8)}(z)k^3-286a_{13}y^{(10)}(z)k^3-455a_{15}y^{(12)}(z)k^3-680a_{17}y^{(14)}(z)k^3-969a_{19}y^{(16)}(z)k^3-$$
$$1330a_{21}y^{(18)}(z)k^3-1771a_{23}y^{(20)}(z)k^3-2300a_{25}y^{(22)}(z)k^3-2925a_{27}y^{(24)}(z)k^3-3654a_{29}y^{(26)}(z)k^3-$$
$$15a_6y^{(4)}(z)k^2-28a_8y^{(6)}(z)k^2-45a_{10}y^{(8)}(z)k^2-66a_{12}y^{(10)}(z)k^2-91a_{14}y^{(12)}(z)k^2-120a_{16}y^{(14)}(z)k^2-$$
$$153a_{18}y^{(16)}(z)k^2 - 190a_{20}y^{(18)}(z)k^2 - 231a_{22}y^{(20)}(z)k^2 - 276a_{24}y^{(22)}(z)k^2 - 325a_{26}y^{(24)}(z)k^2 -$$
$$378a_{28}y^{(26)}(z)k^2 - 435a_{30}y^{(28)}(z)k^2 + 5a_5y^{(4)}(z)k + 7a_7y^{(6)}(z)k + 9a_9y^{(8)}(z)k + 11a_{11}y^{(10)}(z)k +$$
$$13a_{13}y^{(12)}(z)k+15a_{15}y^{(14)}(z)k+17a_{17}y^{(16)}(z)k+19a_{19}y^{(18)}(z)k+21a_{21}y^{(20)}(z)k+23a_{23}y^{(22)}(z)k+$$
$$25a_{25}y^{(24)}(z)k+27a_{27}y^{(26)}(z)k+29a_{29}y^{(28)}(z)k-by(z)^3+(-a_{30}k^{30}+a_{29}k^{29}+a_{28}k^{28}-a_{27}k^{27}-a_{26}k^{26}+a_{25}k$$
$$(a_2+k\,(3a_3+k\,(k\,(15a_6+k\,(21a_7+k\,(k\,(45a_{10}+k\,(55a_{11}+k\,(k\,(91a_{14}+k\,(105a_{15}+k\,(k\,(153a$$
$$a_4y^{(4)}(z)+a_6y^{(6)}(z)+a_8y^{(8)}(z)+a_{10}y^{(10)}(z)+a_{12}y^{(12)}(z)+a_{14}y^{(14)}(z)+a_{16}y^{(16)}(z)+a_{18}y^{(18)}(z)+$$
$$a_{20}y^{(20)}(z)+a_{22}y^{(22)}(z)+a_{24}y^{(24)}(z)+a_{26}y^{(26)}(z)+a_{28}y^{(28)}(z)+a_{30}y^{(30)}(z)=0$$

Constraints on coefficients from imaginary part of equation:

$$a_{29}\to 30a_{30}k$$
$$a_{27}\to 28a_{28}k+8120a_{30}k^3$$
$$a_{25}\to 26a_{26}k+6552a_{28}k^3+2280096a_{30}k^5$$
$$a_{23}\to 24a_{24}k+5200a_{26}k^3+1572480a_{28}k^5+553737600a_{30}k^7$$
$$a_{21}\to 22a_{22}k+4048a_{24}k^3+1052480a_{26}k^5+322058880a_{28}k^7+113541542400a_{30}k^9$$
$$a_{19}\to 20a_{20}k+3080a_{22}k^3+680064a_{24}k^5+178921600a_{26}k^7+54813158400a_{28}k^9+19326701721600a_{30}k^{11}$$
$$a_{17}\to 18a_{18}k+2280a_{20}k^3+421344a_{22}k^5+94140288a_{24}k^7+24796428800a_{26}k^9+7597393090560a_{28}k^{11}+$$
$$2678818983321600a_{30}k^{13}$$
$$a_{15}\to 16a_{16}k+1632a_{18}k^3+248064a_{20}k^5+46387968a_{22}k^7+10376351744a_{24}k^9+2733453598720a_{26}k^{11}+$$

$837515820072960a_{28}k^{13} + 295306112919306240a_{30}k^{15}$

$a_{13} \to 14a_{14}k+1120a_{16}k^3+137088a_{18}k^5+21085440a_{20}k^7+3947525120a_{22}k^9+883115778048a_{24}k^{11}+$

$232643283353600a_{26}k^{13} + 71280785877073920a_{28}k^{15} + 251334419950043136000a_{30}k^{17}$

$a_{11} \to 12a_{12}k+728a_{14}k^3+69888a_{16}k^5+8656128a_{18}k^7+1332930560a_{20}k^9+249576198144a_{22}k^{11}+$

$55834388004864a_{24}k^{13}+14708733593681920a_{26}k^{15}+4506686150828359680a_{28}k^{17}+1589047253724207513600$

$a_9 \to 10a_{10}k + 440a_{12}k^3 + 32032a_{14}k^5 + 3111680a_{16}k^7 + 385848320a_{18}k^9 + 59422904320a_{20}k^{11} +$

$11126417899520a_{22}k^{13}+2489170300469248a_{24}k^{15}+655734757395660800a_{26}k^{17}+200914020585819340800a_{28}$

$708418253707544100864000a_{30}k^{21}$

$a_7 \to 240a_{10}k^3+12672a_{12}k^5+933504a_{14}k^7+90787840a_{16}k^9+11259076608a_{18}k^{11}+1733987205120a_{20}k^{13}+$

$324674387017728a_{22}k^{15}+72635234665365504a_{24}k^{17}+19134668627220889600a_{26}k^{19}+5862771754821054627$

$2067199948150650018201600a_{30}k^{23} + 8a_8k$

$a_5 \to 4032a_{10}k^5 + 215424a_{12}k^7 + 15887872a_{14}k^9 + 1545363456a_{16}k^{11} + 191651217408a_{18}k^{13} +$

$29515853365248a_{20}k^{15}+5526593941929984a_{22}k^{17}+1236393972835811328a_{24}k^{19}+325709541934503034880a_2$

$9979585956589344915456 0a_{28}k^{23} + 3518779245598577891318169 6a_{30}k^{25} + 6a_6k + 112a_8k^3$

$a_3 \to 32640a_{10}k^7+1745920a_{12}k^9+128780288a_{14}k^{11}+12526223360a_{16}k^{13}+1553465966592a_{18}k^{15}+$

$239246490992640a_{20}k^{17}+44796883073761280a_{22}k^{19}+10021832059523170304a_{24}k^{21}+2640102104917816115$

$8089147691031213543260 16a_{28}k^{25} + 285221502512012477144760320a_{30}k^{27} + 4a_4k + 40a_6k^3 +$

$896a_8k^5$

$C0 \to a_1-79360a_{10}k^9-4245504a_{12}k^{11}-313155584a_{14}k^{13}-30460116992a_{16}k^{15}-3777576173568a_{18}k^{17}-$

$2a_2k - 581777702256640a_{20}k^{19} - 108932957168730112a_{22}k^{21} - 24370173276164456448a_{24}k^{23} -$

$6419958484945407574016a_{26}k^{25}-1967044844910430876860416a_{28}k^{27}-693575525634287935244206080a_{30}k^2$

$8a_4k^3 - 96a_6k^5 - 2176a_8k^7$

Constraints on coefficients from real part of equation:

$b \to -\frac{304923569640746613767490984156227174400000000a_{30}\chi^{15}}{A^2}$

$a_{28} \to -435a_{30}k^2 - 13735a_{30}$

$a_{26} \to 27405a_{30}k^4 + 5191830a_{30}k^2 + 86119929a_{30}$

$a_{24} \to -593775a_{30}k^6 - 281224125a_{30}k^4 - 27988976925a_{30}k^2 - 326725589775a_{30}$

$a_{22} \to 5852925a_{30}k^8+5174523900a_{30}k^6+1287492938550a_{30}k^4+90176262777900a_{30}k^2+838048249054965a_{30}$

$a_{20} \to -30045015a_{30}k^{10}-42689822175a_{30}k^8-19827391253670a_{30}k^6-3471786116949150a_{30}k^4-$

$1935891455316969 15a_{30}k^2 - 1538070385569865875a_{30}$

$a_{18} \to 86493225a_{30}k^{12}+180245915850a_{30}k^{10}+134543012078475a_{30}k^8+43975957481355900a_{30}k^6+$

$6130322941837068975a_{30}k^4 + 2922333732582745162 50a_{30}k^2 + 208462529754628316620 5a_{30}$

$a_{16} \to -145422675a_{30}k^{14}-4178428049 25a_{30}k^{12}-457446241066815a_{30}k^{10}-240297196237409025a_{30}k^8-$

$6252929400673810354 5a_{30}k^6-7451951018086000164375a_{30}k^4-3189476705245813244293 65a_{30}k^2-$

$$212265325965320392732567 5a_{30}$$

$$a_{14} \to 145422675a_{30}k^{16}+551001501000a_{30}k^{14}+831720438303300a_{30}k^{12}+64079252329975740 0a_{30}k^{10}+$$

$$267982688600306158050a_{30}k^{8}+5961560814468800131500 0a_{30}k^{6}+6378953410491626488587300a_{30}k^{4}+$$

$$254718391158384471279081000a_{30}k^{2} + 163554016439349500855752291 5a_{30}$$

$$a_{12} \to -86493225a_{30}k^{18}-417842804925a_{30}k^{16}-831720438303300a_{30}k^{14}-883516963943604900a_{30}k^{12}-$$

$$5419205480583968973 90a_{30}k^{10}-193750726470236004273750a_{30}k^{8}-3869898402364920069742962 0a_{30}k^{6}-$$

$$3863228932568831147732728500a_{30}k^{4}-1488341549598080457787345852 65a_{30}k^{2}-952652729902915182635 9$$

$$a_{10} \to 30045015a_{30}k^{20}+180245915850a_{30}k^{18}+457446241066815a_{30}k^{16}+64079252329975740 0a_{30}k^{14}+$$

$$5419205480583968973 90a_{30}k^{12}+284167732156346139601500a_{30}k^{10}+91219033770030258786798390a_{30}k^{8}+$$

$$1699820730330285705002400540 0a_{30}k^{6}+16371757045578885035660804379 15a_{30}k^{4}+628750801735924020 53$$

$$4156131616460043608068120512054 19a_{30}$$

$$a_{8} \to -5852925a_{30}k^{22}-42689822175a_{30}k^{20}-134543012078475a_{30}k^{18}-240297196237409025a_{30}k^{16}-$$

$$267982688600306158050a_{30}k^{14}-193750726470236004273750a_{30}k^{12}-91219033770030258786798390a_{30}k^{10}-$$

$$2731854745173673454468143725 0a_{30}k^{8}-4911527113673665510698241313745a_{30}k^{6}-4715631013019430154 0$$

$$1870259227407019623630654230424385 5a_{30}k^{2} - 133228564494657551049851682459117165a_{30}$$

$$a_{6} \to 593775a_{30}k^{24} + 5174523900a_{30}k^{22} + 19827391253670a_{30}k^{20} + 4397595748135590 0a_{30}k^{18} +$$

$$625292940067381035 45a_{30}k^{16}+596156081446880013150 00a_{30}k^{14}+3869898402364920069742962 0a_{30}k^{12}+$$

$$1699820730330285705002400540 0a_{30}k^{10}+4911527113673665510698241313745a_{30}k^{8}+8802511224302936287$$

$$8727876394566091576943053075313799 0a_{30}k^{4}+3730399805850411429395847108855280620a_{30}k^{2}+$$

$$3034386026412262626947814257428716119 1a_{30}$$

$$a_{4} \to -27405a_{30}k^{26} - 281224125a_{30}k^{24} - 1287492938550a_{30}k^{22} - 3471786116949150a_{30}k^{20} -$$

$$6130322941837068975a_{30}k^{18}-7451951018086000164375a_{30}k^{16}-6378953410491626488587300a_{30}k^{14}-$$

$$3863228932568831147732728500a_{30}k^{12}-1637175704557888503566080437915a_{30}k^{10}-4715631013019430154 0$$

$$8727876394566091576943053075313799 0a_{30}k^{6}-9325999514626028573489617772138201550a_{30}k^{4}-$$

$$4551579039618393940421721386143074178 65a_{30}k^{2}-463066169248408331303574614495774208382 5a_{30}$$

$$a_{2} \to 435a_{30}k^{28}+5191830a_{30}k^{26}+27988976925a_{30}k^{24}+90176262777900a_{30}k^{22}+19358914553169691 5a_{30}k^{20}+$$

$$2922333732582745162 50a_{30}k^{18}+3189476705245813244293 65a_{30}k^{16}+254718391158384471279081000a_{30}k^{14}+$$

$$1488341549598080457787345852 65a_{30}k^{12}+628750801735924020539724847294 50a_{30}k^{10}+187025922740701962$$

$$3730399805850411429395847108855280620a_{30}k^{6}+4551579039618393940421721386143074178 65a_{30}k^{4}+$$

$$2778397015490449987821447686974645250295 0a_{30}k^{2}+42293976378694744121914396671017803776937 5a_{30}$$

$$\omega \to -a_{1}k+29a_{30}k^{30}+370845a_{30}k^{28}+2152998225a_{30}k^{26}+7514688564825a_{30}k^{24}+17599013230154265a_{30}k^{22}+$$

$$2922333732582745162 5a_{30}k^{20}+3543863005828681382548 5a_{30}k^{18}+3183979889479805890988512 5a_{30}k^{16}+$$

$$2126202213711543511124779789 5a_{30}k^{14}+1047918002893206700899541412157 5a_{30}k^{12}+3740518454814039 24$$

$$9325999514626028573489617772138201 55a_{30}k^{8}+1517193013206131313473907128714358059 55a_{30}k^{6}+$$

$$13891985077452249939107238434873226251475a_{30}k^4+42293976378694744121914396671017803776937 5a_{30}$$

$$17410450495992757948660282634885774797265625a_{30}$$

y(z) - function:

$$\frac{1073741824a^{15}A}{(4a^2e^z+\chi e^{-z})^{15}}$$

u(x, t) - function:

$$\frac{1073741824a^{15}Ae^{i(kx-\omega t)}}{(4a^2e^{\mathrm{C0}t+x}+\chi e^{-\mathrm{C0}t-x})^{15}}$$