Supplementary Material to "Fourier analysis of nonlinear pendulum oscillation"

Appendix B

Scilab code for computing the Fourier coefficients a_0, a_n and b_n of the series given by Eq. (6).

```
    t = 0:0.01:6.26
function dy = f(t,y)//differential equation for pendulum
dy(1) = y(2)
dy(2) = − sin(y(1))
endfunction
y = ode ([0; 1.6], 0, t, f);
plot2d(t', y(2,:)')
x = y(2,:);
p = size(x);
N = p(1,2);
for k = 0:5//calculating first six DFS coefficients a0 - a5
z(k+1) = 0;
for j = 0:N-1
z(k+1) = z(k+1) + x(j+1)*exp(-%i*2*%pi*j*k/N);
end
end
m = (2/N)*z;
file1=mopen('m1a8.txt','wt')
disp(m)
mfprintf(file1,'%f %f %f %f %f %f',m(1),m(2),m(3),m(4),m(5),m(6))
mclose(file1)
```