

```
#####Profil de la tuy re#####
```

```
x0=-20:2:170;
l0=[25 25 25 25 25 25 25 25 25 25 25 24.6 24.1 23.7 23.2 22.7 22.2 21.6 21.1 20.3
19.5 18.6 17.7 16.7 15.6 14.7 13.7 12.7 11.8 11.2 10.7 10.4 10.2 10.1 10.1 10.1
10.2 10.3 10.4 10.5 10.6 10.8 11 11.2 11.3 11.5 11.7 12 12 12.3 12.55 12.75 12.95
13.25 13.55 13.85 14.1 14.4 14.7 15 15.25 15.55 15.85 16.25 16.65 17 17.3 17.65
17.9 18.15 18.3 18.55 18.75 19 19.3 19.55 19.8 20 20.15 20.2 20.3 20.35 20.4 20.45
20.5 20.6 20.6 20.6 20.6 20.6 20.6 20.6 20.6 20.6 20.6];
y1=(25-10)/2;
y2=(25+10)/2;
figure(1)
plot(x0,y1);
hold on
plot(x0,y2);
edit
xlabel('Position en cm')
ylabel('Largeur en cm')
title('Profil de la tuy re')
hold off
```

```
#####Calcul de la largeur#####
a=y2-y1;
```

```
#####Profil en fonction de la hauteur de la vanne#####
```

```
%relévés des hauteurs d'eau mesurés avec un pointeau
```

```
x41=[-20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170];
h41=[29 29 29 29 28.8 28.3 26.6 24 21.8 19.6 18.5 17.5 16.5 15.9 15.3 14.9 14.7
14.7 14.6 14.6];
h01=h41-10.2;
x42=[-20 -10 0 10 20 30 40 50 60 70 80 90 95 110 150 160 170];
h42=[29.6 29.6 29.6 29.6 29.5 29 27.6 26.2 22.5 20.6 19.4 18.6 18.5 23.5 26 26.6
26.6];
h02=h42-10.2;
x43=[-20 -10 0 10 20 25 30 35 40 45 50 55 60 69.2 80 90 100 110 150 170];
h43=[30 30 30 30 29.8 29.5 29.3 28.5 27.7 26.7 25.4 24 23.1 21.8 24.5 26.5 27.1
27.5 27.9 28.2];
h03=h43-10.2;
x44=[-20 -10 0 10 20 30 40 45 50 55 60 65 70 80 90 100 110 150 170];
h44=[33.1 33.1 33.1 33.1 33 32.5 31.4 30.6 30 29.5 29.5 30.7 31.2 32.2 32 32.2 32.5
32.5 32.5];
h04=h44-10.2;
x45=[-20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 150 170];
h45=[37 37 37 37 37 36.5 36 35.2 35.5 36 36.3 36.3 36.5 36.5 36.7 37 37];
h05=h45-10.2;
figure(2)
plot(x41,h01,'b+-');
hold on
plot(x42,h02,'gx-');
plot(x43,h03,'rx-');
plot(x44,h04,'blackx-');
plot(x45,h05,'cx-');
edit
legend('hvanne2=0cm','hvanne2=9cm','hvanne=11.2cm','hvanne=15.7cm','hvanne=19.7cm')
xlabel('Position en cm')
ylabel('hauteur en cm')
title('Evolution du profil en fonction de la hauteur de la vanne pour un d bit de
14.6L/s')
hold off
```

```
#####Profil h/h0 en fonction de la position#####
```

```
h011=h01/h01(1);%hauteurs adimensionn es
h021=h02/h02(1);
h031=h03/h03(1);
h041=h04/h04(1);
```

```

h051=h05/h05(1);
figure(3)
plot(x41,h011,'b+-');
hold on
plot(x42,h021,'gx-');
plot(x43,h031,'rx-');
plot(x44,h041,'blackx-');
plot(x45,h051,'cx-');
edit
legend('hvanne2=0cm','hvanne2=9cm','hvanne=11.2cm','hvanne=15.7cm','hvanne=19.7cm')
xlabel('Position en cm')
ylabel('h/h0')
title('Evolution du h0/h en fonction de la position pour diff rentes hauteurs de
vanne pour un d bit de 14.6L/s')
hold off

```

```

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%h/h0 en fonction de Fr%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

```

```

Q=14.6e-3; %d bit en m^3/s
g=9.8 %gravit

```

```

%%Longueur des vecteurs positions

```

```

s1=length(x41);
s2=length(x42);
s3=length(x43);
s4=length(x44);
s5=length(x45);

```

```

%%Calcul des Vitesses

```

```

%%Calcul de la largeur par interpolation avec le profil de la tuy re

```

```

for i=1:s1
    l1(i)= interp1(x0,a,x41(i));
    u01(i)=Q*1e4./(l1(i)*h01(i));
end

```

```

for i=1:s2
    l2(i)= interp1(x0,a,x42(i));
    u02(i)=Q*1e4./(l2(i)*h02(i));
end

```

```

for i=1:s3
    l3(i)= interp1(x0,a,x43(i));
    u03(i)=Q*1e4./(l3(i)*h03(i));
end

```

```

for i=1:s4
    l4(i)= interp1(x0,a,x44(i));
    u04(i)=Q*1e4./(l4(i)*h04(i));
end

```

```

for i=1:s5
    l5(i)= interp1(x0,a,x45(i));
    u05(i)=Q*1e4./(l5(i)*h05(i));
end

```

```

%Calcul du Froude

```

```

Fr01=u01./(g*1e-2*h01).^(1/2);% Nombre de Froude
Fr02=u02./(g*1e-2*h02).^(1/2);
Fr03=u03./(g*1e-2*h03).^(1/2);
Fr04=u04./(g*1e-2*h04).^(1/2);
Fr05=u05./(g*1e-2*h05).^(1/2);

```

```

figure(4)
plot(x41,Fr01,'b+-');
hold on

```

```
plot(x42,Fr02,'gx-');
plot(x43,Fr03,'rx-');
plot(x44,Fr04,'blackx-');
plot(x45,Fr05,'cx-');
edit
legend('hvanne2=0cm','hvanne2=9cm','hvanne=11.2cm','hvanne=15.7cm','hvanne=19.7cm')
xlabel('Position en cm')
ylabel('Fr')
title('Profil du Fr pour diff rentes hauteurs de vanne pour un d bit de 14.6L/s')
hold off

figure(5)
plot(Fr01,h011,'b+-');
hold on
plot(Fr02,h021,'gx-');
plot(Fr03,h031,'rx-');
plot(Fr04,h041,'blackx-');
plot(Fr05,h051,'cx-');
edit
legend('hvanne2=0cm','hvanne2=9cm','hvanne=11.2cm','hvanne=15.7cm','hvanne=19.7cm')
xlabel('Nombre de Froude')
ylabel('h/h0')
title('Evolution du h/h0 en fonction de Fr pour diff rentes hauteurs de vanne pour un d bit de 14.6L/s')
hold off
```