

Runfile.m:

```
phi0 = 15; %m
phi1 = 18.5; %m
L = 1000 ;%m
d = 175 ;%m
z0 = -d;
K = 10 ;%m
rw = 0.2; %m
W0 = 0.5 * K * (phi1^2 - phi0^2)/L;
a= .6;
Q = 3.1415 * d * W0 * a; %m^2/ d

%ContourMe_flow_net(-1000,0,200,-
200,200,200,@(z)Omega_total(z,W0,Q,z0,rw),30);
ContourMe_R_int(-200,-140,200,-50,50,200,@(z)mod_W(W_total(z,
W0, Q, z0, rw)), 1000);
```

W_total.m:

```
function [ W ] = W_total (z, W0, Q, z0, rw)
W = W_Uniformflow(W0) + W_well(z, z0, rw, Q) - W_well(z, -z0,
rw, Q);

end
```

W_Uniformflow.m:

```
function [ W ] = W_Uniformflow (W0)
W= W0/2;
end
```

W_well.m:

```
function [ W ] = W_well (z, z0, rw,Q)

rsq=(z-z0)*conj(z-z0);
if rsq>rw^2
    W=(-Q/(2*pi))/(z-z0);
else
    W = Q;
end

end
```

mod_W.m:

```
function [modW] = mod_W (W)
modW = (W* conj(W));
end
```

Omega_flow.m:

```
function [ Omega ] = Omega_Uniformflow (W0,z)
Omega = -W0*z/2
end
```

Omega_to_phi UNC.m:

```
function [ phi ] = Omega_to_phi UNC (Omega, K)
phi = sqrt(2*real(Omega)/K);
end
```

Omega_total.m:

```
function [ Omega ] = Omega_total( z,W0,Q, z0,rw)
Omega=Omega_Uniformflow(W0,z) + Omega_well(z,z0,rw,Q) -
Omega_well(z,-z0,rw,Q);
end
```

Omega_Uniformflow.m:

```
function [ Omega ] = Omega_Uniformflow (W0,z)
Omega = -W0*z/2;
end
```

Omega_well.m:

```
function [ Omega ] = Omega_well(z,z0,rw,Q)
rsq=(z-z0)*conj(z-z0);
if rsq>rw^2
    Omega=Q/(2*pi)*log(z-z0);
else
    Omega = 0;
end
```

phi_to_Omega UNC.m:

```
function [ Omega ] = phi_to_Omega UNC (phi, K)
Omega = 0.5 * K* phi^2 ;
end
```