

*Dedicated to Professor Ion PĂVĂLOIU on his 60<sup>th</sup> anniversary*

## THE MODELLING OF INCOMPRESSIBLE FLUID MOVEMENT USING HELMHOLTZ'S DIAGRAM

Lidia Elena KOZMA

### 1. INTRODUCTION.

We consider the steady flow of incompressible fluid, which moves in the circular domain  $r^2 \leq x^2 + y^2 \leq R^2$  as shown (Figure 1)

We assume that in a very short time, the interior circle travels almost tangential to the exterior circle. If the circles were tangent, the velocity of their contact point is zero [1].

We study the flow immediately after the two circles move away (see Figure 2). Further we make the following hypotheses:

1. The fluid attacks the interior solid circle with velocity  $V_0$  in a point O, (see Figure 3). The stream lines, DO, branches out in two streamlines along the solid  $OP_1 \equiv L_1$  and  $OP_2 \equiv L_2$ .

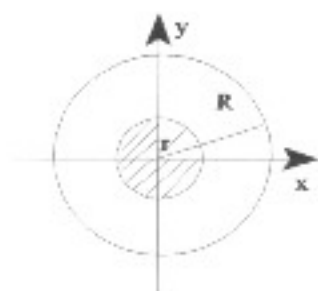


Figure 1

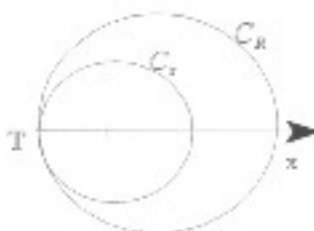


Figure 2

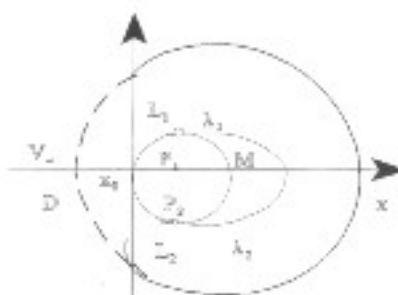


Figure 3