

Fig. 1

DATI

```
 $\gamma = \pi / 3;$   
 $\omega_1 = -1;$   
 $AO_1 = 21.6 / 100;$   
 $AK_4 = 50 / 100;$   
 $BO_2 = 43.3 / 100;$   
 $BK_4 = 50 * \text{Sin}[\gamma] / 100;$   
 $CK_4 = 50 * \text{Cos}[\gamma] / 100;$   
 $KO_2 = BK_4 + BO_2;$ 
```

CALCOLO DI V_A^R E ω_4

```
 $\mathbf{v}_A = \text{Cross}[\omega_1 * \mathbf{k}, AO_1 * (-\mathbf{j})]$   
{-0.216, 0, 0.}  
 $\mathbf{e} = -\text{Cos}[\gamma] * \mathbf{i} + \text{Sin}[\gamma] * \mathbf{j};$   
 $\mathbf{f} = -\text{Cos}[\gamma] * \mathbf{i} - \text{Sin}[\gamma] * \mathbf{j};$   
 $\text{eq1} = \text{Dot}[\text{varel} * \mathbf{e} + \text{Cross}[\omega_4 * \mathbf{k}, AK_4 * \mathbf{f}], \mathbf{i}] == \text{Dot}[\mathbf{v}_A, \mathbf{i}]$   
 $\text{eq2} = \text{Dot}[\text{varel} * \mathbf{e} + \text{Cross}[\omega_4 * \mathbf{k}, AK_4 * \mathbf{f}], \mathbf{j}] == \text{Dot}[\mathbf{v}_A, \mathbf{j}]$   

$$-\frac{\text{varel}}{2} + \frac{\sqrt{3} \omega_4}{4} == -0.216$$
  

$$\frac{\sqrt{3} \text{varel}}{2} - \frac{\omega_4}{4} == 0$$
  
 $\text{solu1} = \text{Solve}[\{\text{eq1}, \text{eq2}\}, \{\text{varel}, \omega_4\}][[1]]$   
{varel  $\rightarrow$  -0.216,  $\omega_4 \rightarrow$  -0.748246}  
 $\text{varel} = \text{varel} /. \text{solu1}$   
-0.216  
 $\omega_4 = \omega_4 /. \text{solu1}$   
-0.748246
```

CALCOLO DI ω_2

```
 $\mathbf{v}_B = \text{Cross}[\omega_2 * \mathbf{k}, BO_2 * \mathbf{j}]$   
{-0.433  $\omega_2$ , 0, 0.}  
 $\omega_2 =$   
 $\omega_2 /. \text{Solve}[\text{Dot}[\mathbf{v}_B, \mathbf{i}] == \text{Dot}[\text{Cross}[\omega_4 * \mathbf{k}, BK_4 * (-\mathbf{j})], \mathbf{i}],$   
 $\omega_2][[1]]$   
0.748268
```

CALCOLO DI V_C

```
 $\mathbf{v}_C = \text{Cross}[\omega_4 * \mathbf{k}, CK_4 * (-\mathbf{i})]$   
{0., 0.187061, 0}
```

CALCOLO DI $V_{k_4}^*$

```
 $\text{eq3} = \text{Dot}[\mathbf{v}_C + \mathbf{vkstarrel1} * \mathbf{i}, \mathbf{i}] ==$   
 $\text{Dot}[\text{Cross}[\omega_2 * \mathbf{k}, KO_2 * \mathbf{j}] + \mathbf{vkstarrel2} * \mathbf{j}, \mathbf{i}]$   
 $\text{eq4} = \text{Dot}[\mathbf{v}_C + \mathbf{vkstarrel1} * \mathbf{i}, \mathbf{j}] ==$   
 $\text{Dot}[\text{Cross}[\omega_2 * \mathbf{k}, KO_2 * \mathbf{j}] + \mathbf{vkstarrel2} * \mathbf{j}, \mathbf{j}]$   
 $0. + \mathbf{vkstarrel1} == -0.64801$   
 $0.187061 == 0. + \mathbf{vkstarrel2}$   
 $\text{solu2} = \text{Solve}[\{\text{eq3}, \text{eq4}\}, \{\mathbf{vkstarrel1}, \mathbf{vkstarrel2}\}][[1]]$   
{vkstarrel1  $\rightarrow$  -0.64801, vkstarrel2  $\rightarrow$  0.187061}  
 $\mathbf{vdikstar4} = \mathbf{v}_C + (\mathbf{vkstarrel1} /. \text{solu2}) * \mathbf{i}$   
{-0.64801, 0.187061, 0}
```

CALCOLO DI a_{K_4}

```
adik4 = Cross[vdikstar4,  $\omega_4$  * k]
{-0.139968, -0.48487, 0.}
```

CALCOLO DI a_A^R E $\dot{\omega}_4$

```
aA = - $\omega_1^2$  AO1 * (-j)
{0, 0.216, 0}
eq5 =
  Dot[aarel * e + adik4 + Cross[ $\omega_{pto4}$  * k, AK4 * f] -
     $\omega_4^2$  AK4 * f + 2 * Cross[ $\omega_4$  * k, vare1 * e], i] == Dot[aA, i]
eq6 =
  Dot[aarel * e + adik4 + Cross[ $\omega_{pto4}$  * k, AK4 * f] -
     $\omega_4^2$  AK4 * f + 2 * Cross[ $\omega_4$  * k, vare1 * e], j] == Dot[aA, j]
-0.279936 -  $\frac{aarel}{2} + \frac{\sqrt{3} \omega_{pto4}}{4} == 0$ 
-0.40406 +  $\frac{\sqrt{3} aarel}{2} - \frac{\omega_{pto4}}{4} == 0.216$ 
solu3 = Solve[{eq5, eq6}, {aarel,  $\omega_{pto4}$ }] [[1]]
{aarel  $\rightarrow$  1.35391,  $\omega_{pto4} \rightarrow$  2.20985}
aarel = aarel /. solu3
1.35391
 $\omega_{pto4}$  =  $\omega_{pto4}$  /. solu3
2.20985
```

CALCOLO DI a_C

```
aC = adik4 + Cross[ $\omega_{pto4}$  * k, CK4 * (-i)] -  $\omega_4^2$  CK4 * (-i)
{0., -1.03733, 0.}
```