In[ ]:=
```
Solve[
解方程
 {mv p^2 xv == (-k - v p) (xv - xf),
  (mf + ma) p^2 xf == (k + v p) (xv - xf) - u p xf - r xf + f * p/(p^2 + w^2)},
 {xf, xv}]
```

Out[ ]=
$$\left\{\left\{xf \to \frac{f\, p\, \left(k + mv\, p^2 + p\, v\right)}{\left(-(-k - p\, v)^2 + \left(k + mv\, p^2 + p\, v\right)\left(k + (ma + mf)\, p^2 + r + p\, u + p\, v\right)\right)\left(p^2 + w^2\right)},\right.\right.$$
$$xv \to (f\, p\, (k + p\, v)) \Big/ \left(\left(k\, ma\, p^2 + k\, mf\, p^2 + k\, mv\, p^2 + ma\, mv\, p^4 + mf\, mv\, p^4 + k\, r + mv\, p^2\, r + k\, p\, u + mv\, p^3\, u + ma\, p^3\, v + mf\, p^3\, v + mv\, p^3\, v + p\, r\, v + p^2\, u\, v\right)\left(p^2 + w^2\right)\right)\}\}$$

In[ ]:=
```
(*不变参数*)
mv = 2433;
mf = 4866;
k = 80 000;
g = 9.8;
r = 1025 * g * Pi;
              圆周率
v = 10 000
km = 250 000;
rm = 8890.7;
l = 0.5;
w = 1.4005;
ma = 1335.535;
μ = u = 656.3616;
(*μm=um=151.4388;*)
f = 6250;
```

Out[ ]= 10 000

In[ ]:=
$$xf = \frac{f\, p\, \left(k + mv\, p^2 + p\, v\right)}{\left(-(-k - p\, v)^2 + \left(k + mv\, p^2 + p\, v\right)\left(k + (ma + mf)\, p^2 + r + p\, u + p\, v\right)\right)\left(p^2 + w^2\right)}$$
$$xv = (f\, p\, (k + p\, v)) \Big/ \left(\left(k\, ma\, p^2 + k\, mf\, p^2 + k\, mv\, p^2 + ma\, mv\, p^4 + mf\, mv\, p^4 + k\, r + mv\, p^2\, r + k\, p\, u + mv\, p^3\, u + ma\, p^3\, v + mf\, p^3\, v + mv\, p^3\, v + p\, r\, v + p^2\, u\, v\right)\left(p^2 + w^2\right)\right)$$

Out[ ]=
$$\left(6250\, p\, \left(80\,000 + 10\,000\, p + 2433\, p^2\right)\right) \Big/ \left(\left(1.9614 + p^2\right)\left(-(-80\,000 - 10\,000\, p)^2 + \left(80\,000 + 10\,000\, p + 2433\, p^2\right) \times \left(111\,557. + 10\,656.4\, p + 6201.54\, p^2\right)\right)\right)$$

Out[ ]=
$$(6250\, p\, (80\,000 + 10\,000\, p)) \Big/ \left(\left(1.9614 + p^2\right) \times \left(2.52458 \times 10^9 + 3.68082 \times 10^8\, p + 7.74105 \times 10^8\, p^2 + 8.79423 \times 10^7\, p^3 + 1.50883 \times 10^7\, p^4\right)\right)$$

浮子位移

```
Re[InverseLaplaceTransform[xf, p, t]] /. t → {Range[0, 40 × 2 Pi / w, 0.2]}
```
└… └拉普拉斯反变换 └范围 └圆周率

浮子速度

In[•]:=
```
Re[D[InverseLaplaceTransform[xv, p, t], t]] /. t → {Range[0, 40 × 2 Pi / w, 0.2]}
```
└… └‥ └拉普拉斯反变换 └范围 └圆周率

振子位移

```
Re[InverseLaplaceTransform[xv, p, t]] /. t → {Range[0, 40 × 2 Pi / w, 0.2]}
```
└… └拉普拉斯反变换 └范围 └圆周率

振子速度

```
Re[D[InverseLaplaceTransform[xf, p, t], t]] /. t → {Range[0, 40 × 2 Pi / w, 0.2]}
```
└… └‥ └拉普拉斯反变换 └范围 └圆周率

画图像

In[•]:=
```
Xf = Re[InverseLaplaceTransform[xf, p, t]];
```
└… └拉普拉斯反变换

```
Xv = Re[InverseLaplaceTransform[xv, p, t]];
```
└… └拉普拉斯反变换

```
Plot[ {Xv, Xf}, {t, 0, 40 * 2 Pi / w}]
```
└绘图 └圆周率

```
(*Plot[{D[Xf,t]},{t,0,200}]*)
```
└绘图 └偏导