In[95]:=
```
(* BENEFITS OF SHARING INFORMATION IN ITERATIVE LEARNING CONTROL,
Case of Pure Process Noise, Angela Schöllig, Oct 2009 *)
```

In[96]:=
```
Remove["Global`*"]
```

In[97]:=
```
pN = (a + b + j b (n a + b)) / ((1 + j (n a + b)) (1 + j b))
```

Out[97]=
$$\frac{a + b + b\,j\,(b + a\,n)}{(1 + b\,j)\,(1 + j\,(b + a\,n))}$$

In[98]:=
```
p11 = Simplify[pN /. n → 1]
```

Out[98]=
$$\frac{a + b}{1 + a\,j + b\,j}$$

In[99]:=
```
Rproc = Simplify[(1 + p11) / (1 + pN)]
```

Out[99]=
$$\frac{1 + \frac{a+b}{1+a\,j+b\,j}}{1 + \frac{a+b+b\,j\,(b+a\,n)}{(1+b\,j)\,(1+b\,j+a\,j\,n)}}$$

In[100]:=
```
FullSimplify[D[Rproc, n]]
```

Out[100]=
$$\frac{a^2\,j\,(1 + b\,j)\,(1 + a + b + (a + b)\,j)}{(1 + (a + b)\,j)\,(a + (1 + b\,j)\,(1 + b + b\,j) + a\,j\,(1 + b + b\,j)\,n)^2}$$

In[101]:=
```
RprocN = FullSimplify[Limit[Rproc, n → Infinity]]
```

Out[101]=
$$\frac{(1 + b\,j)\,(1 + a + b + (a + b)\,j)}{(1 + b + b\,j)\,(1 + (a + b)\,j)}$$

In[102]:=
```
FullSimplify[D[RprocN, a]]
```

Out[102]=
$$\frac{1 + b\,j}{(1 + b + b\,j)\,(1 + (a + b)\,j)^2}$$

In[103]:=
```
RprocNa = FullSimplify[Limit[RprocN, a → Infinity]]
```

Out[103]=
$$\frac{(1 + j)\,(1 + b\,j)}{j\,(1 + b + b\,j)}$$

In[104]:=
```
FullSimplify[D[RprocNa, b]]
```

Out[104]=
$$-\frac{1 + j}{j\,(1 + b + b\,j)^2}$$

In[105]:=
```
RprocNab = FullSimplify[Limit[RprocNa, b → 0]]
```

Out[105]=
$$1 + \frac{1}{j}$$