
Subject: Re: Fast way to calculate sum of discrete poisson distribution

Posted by [Jonathan Dursi](#) on Sat, 24 Feb 2007 23:12:54 GMT

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On Feb 24, 4:10 pm, b...@kaifler.net wrote:

> I have been struggling with this for a while. Basically I need to
> calculate the quadratic sum of the discrete poisson distribution:
>
> k = INDGEN(8)
>
> sum = TOTAL(p^k / FACTORIAL(k) * EXP(-p) * k^2)
>
> This workes fine for a scalar p. Is there a way to calculate the
> quadratic sum for every element of an array p without using a loop?

So something like this seems to work:

```
IDL> k = rebin(indgen(8),8,3)
```

```
IDL> p = transpose(rebin([.1,.4,.9],3,8))
```

```
IDL> print, k
```

```
  0   1   2   3   4   5   6   7
  0   1   2   3   4   5   6   7
  0   1   2   3   4   5   6   7
```

```
IDL> print, p
```

```
  0.100000  0.100000  0.100000  0.100000  0.100000
0.100000  0.100000  0.100000
  0.400000  0.400000  0.400000  0.400000  0.400000
0.400000  0.400000  0.400000
  0.900000  0.900000  0.900000  0.900000  0.900000
0.900000  0.900000  0.900000
```

```
IDL> sum = total(p^k/factorial(k)*exp(-p)*k^2,1)
```

```
IDL> print, sum
```

```
  0.11000000  0.55999927  1.7096826
```

- Jonathan

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