

## Sheet 4

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**Assignments for the lecture PSSA**  
**working period: 22.11.2007 - 28.11.2007**

**Exercise 9** (Normal Approximation for M0). Adjust the formulas from the lecture for the normal approximation such that they deal with the M0 model.

**Exercise 10** (M0 Normal Approximation). Consider the word  $u = A^r$  and  $v = A^{r-1}C$  in a two letter alphabet with  $P(A) = p$ .

1. Compute the asymptotic variance for  $u$  and  $v$ .
2. Compare the variances depending on  $p$  and draw conclusions.

**Exercise 11** (Word Count Distributions). Consider the words and background models from the exercise 8:

1. compute the normal approximation for the word counts
2. draw the graph and the ones for the other approximations/exact distribution for each word and for each background model in one plot
3. compare the results!