

# **High Performance Computer Architectures Practical Course - Exercise 6 -**

Tutorium 1

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## Section 1

First and foremost, we must decide which data should be grouped and how it should be grouped in order to vectorize the track fitting procedure. To achieve maximum independence, M tracks can be handled simultaneously. The procedure involves:

### FittingDemo\_1

To accomplish this task we need to adjust the polynomial order of our background function to the order of three, four and six. We do this with the following code snippets:

```
1      Double_t background(Double_t *x, Double_t *par) {
2      return par[0] + par[1]*x[0] + par[2]*x[0]*x[0] +
          par[3]*x[0]*x[0]*x[0];
3      }
```

File 1: Order 3

```
1      Double_t background(Double_t *x, Double_t *par) {
2      return par[0] + par[1]*x[0] + par[2]*x[0]*x[0]
          + par[3]*x[0]*x[0]*x[0] + par[4]*x[0]*x
          [0]*x[0]*x[0];
3      }
```

File 2: Order 4

```
1      Double_t background(Double_t *x, Double_t *par) {
2      return par[0] + par[1]*x[0] + par[2]*x[0]*x[0]
          + par[3]*x[0]*x[0]*x[0] + par[4]*x[0]*x
          [0]*x[0]*x[0] + par[5]*x[0]*x[0]*x[0]*x[0]*
          x[0] + par[6]*x[0]*x[0]*x[0]*x[0]*x[0]*x
          [0];
3      }
```

File 3: Order 6

In the code snippets above the function 'background' takes two parameters x and the value par, which denotes an array of parameters (six in total).