**Multiple Quantities of Interest**

October 4, 2015

Use SEIR as an example

1. MuPAD file (SEIR.mu)

Includes…

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.

qdim:= 3;

qoi[1]:= …

qoi[2]:= …

qoi[3]:= …

.

.

read("CreateUserQoI.mu");  
CreateUserQoI(qoi,qdim);

1. CreateUserQoI.mu
2. Run by SEIR.mu
3. Creates the Matlab file Examples/ODE\_examples/SEIR/user\_qoi.m

Note that other “CreateUser\*\*\*.mu” create files

1. user\_equations.m,
2. user\_inputs.m,
3. user\_parameters.m
4. user\_plotdata.m
5. user\_qoi.m
6. user\_qoi.m
7. Returns a vector of strings qoi of length qdim
8. Returns qdim
9. mminterface.m
10. Creates a single string “qtotal” containing the components of the (qdim) vector of strings qoi separated by semicolons
11. Calls MuPadRoutines/qoi.mu
12. qoi.mu
    1. Receives a string “qtotal”
    2. Splits up the string into a vector of strings qs[iq], iq=1,…,qdim
    3. Creates a vector of text qx[iq], iq=1,…,qdim
    4. Differentiates qx[.] to create dqdx[iq,j], iq=1,…,qdim, j=1,…,xdim
    5. Differentiates qx[.] to create dqdp[iq,k], iq=1,…,qdim, k=1,…,kdim
    6. Creates Matlab files qoi.m which computes and returns q, dqdx and dqdp
13. solve\_qoi.m
    1. Computes q(iq,it), iq=1,…,qdim, it=1,…nt
    2. Computes dqdx(iq,idim,it), iq=1,…,qdim, idim=1,…,xdim, it=1,…nt
    3. Computes dqdparam(iq,kdim,it), iq=1,…,qdim, kdim=1,…,kdim+xdim, it=1,…nt

**Question** Can MuPaD procedure qoi.mu now receive a vector of strings? This would save the creation and then unpacking of qtotal.