

## Install gradient\_damage on Ubuntu:

1. To install FEniCS on Ubuntu, run the following commands:
  - A) `sudo apt-get install software-properties-common`
  - B) `sudo add-apt-repository ppa:fenics-packages/fenics`
  - C) `sudo apt-get update`
  - D) `sudo apt-get install --no-install-recommends fenics`
  - E) `sudo apt-get dist-upgrade`
2. Download the gradient damage: `git clone https://bitbucket.org/cmaurini/gradient-damage.git`
3. `cd gradient-damage`
4. change the python path (pwd: present working directory)
  - A) Export `PYTHONPATH=$(pwd):$PYTHONPATH`
  - B) Check the PYTHON path: `echo $PYTHONPATH`
5. Add the PYTHON path to bashrc permanently:
  - A) Edit bashrc: `gedit ~/.bashrc`
  - B) Add the line to end of the file and save it: `export PYTHONPATH=/home/user/gradient-damage:$PYTHONPATH`
  - C) Comment: /home/user/gradient-damage is the location of the folder contains the gradient damage classes (problem, material, and...)
6. install gmsh:
  - A) `sudo apt-get update`
  - B) `sudo apt-get install gmsh`