**Some useful links regarding conductance matrices**

* “SPICE algorithms and internals” by Paul D. Mitcheson  
  Basic/easy to understand introduction how SPICE works through conduction matrices and Newton-Raphson method.  
  <http://www3.imperial.ac.uk/pls/portallive/docs/1/7292571.PDF>
* “In a Nutshell: How SPICE Works”  
  Very good reference that tells you quickly how SPICE does what. This can then be used to look it up in more detail somewhere else.  
  <http://www.emcs.org/acstrial/newsletters/summer09/HowSpiceWorks.pdf>
* An Algorithm for Modified Nodal Analysis (MNA)  
  A usable (little chaotic) explanation of how MNA works and how to obtain it algorithmically. MNA is used by SPICE as it can deal with voltage sources. Voltage sources cause a problem with conventional nodal analysis due to infinite conductance.   
  Also includes reactive components (explanation even more chaotic…)  
  <https://lpsa.swarthmore.edu/Systems/Electrical/mna/MNA1.html>
* HELM Math by Nucinkis (From page 39 – actual pdf page = 41)  
  Easy to understand mathematical explanation of Newton-Raphson method  
  (For quick circuit analysis application example, see “SPICE algorithms and internals” above)  
  <http://nucinkis-lab.cc.ic.ac.uk/HELM/HELM_Workbooks_11-15/WB12-all.pdf>