Simple_OTA_LIMITED_SAT

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```
*
*                INNP
*                      \
*            _____|\           OUT0
*           |         | \/\/\
*          _|_        | /\/\
*          _|_        |_/
*         /    \    __|
*        //\    \  |   B_OTA0
*        \   \//   |
*         \   /    |_
*         _|_      \\\
*         7//           R1
*                    _/\ /\ /\_
*                   |  \/  \/   |
*                   |_          |
*                   \\\     5K
*
*
```
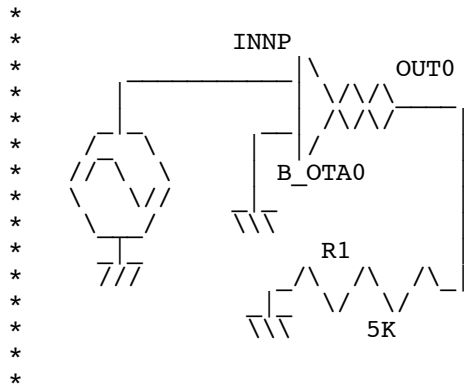
```
VIN       VIN       0    DC     0
B_OTA1    OUT0      0    I =   -1*v(VIABC)*tanh(( v(VIN) )/.052)
R1        OUT0      0    2k
B_BUF1    VOUT      0    V =    v(OUT0)
V_Iabc    VIABC     0    DC     1m

.control
dc        vin  -1V 1V 1m v_iabc .5m 1m  .1m
run
set       pensize = 2
plot       v(out0)
.endc

.end
```

====================END_OF_SPICE============================

The OTA structure also allows construction of any type of nonlinearities. There are are several common System transfer functions which one often will encounter when trying to apply electronics to the real world. A combination of these types of nonlinearities may be needed to closely simulate the actual nonlinearies of real world components.

The LIMIT SATURATION curve is perhaps the most common.
It is the type of nonlinearity that OTAs have.

Graph 38 – dc45: OTA_LIMITED_SAT