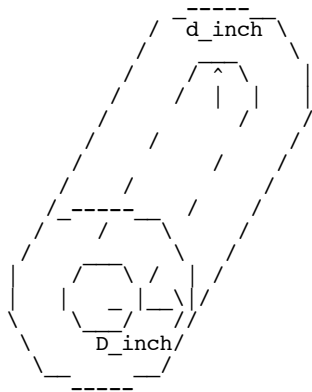
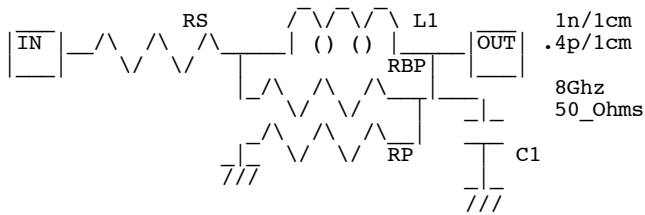
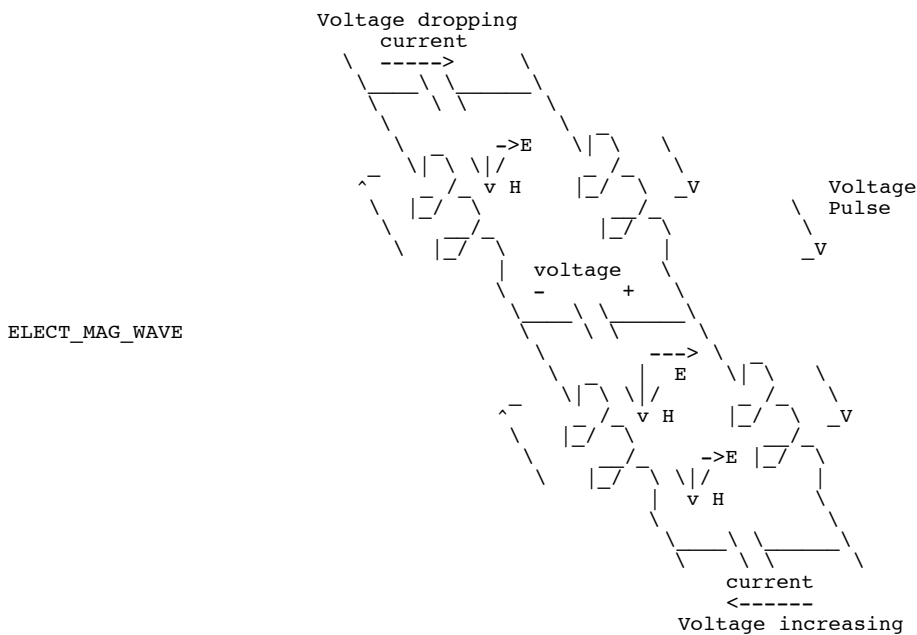


=====Spread\_Spectrum\_Sampling=====

- 1) Trusting in **Black\_Box Spice models for transission line** doesn't always work.
- 2) Modeling transission lines as a series of LRC networks can come close.
- 3) The serial **skin effect resistor RS** is added to a LR network.
- 4) The parallel **diaelectric loss resistor RP** is added.
- 5) **Mutual inductance and capacitance** is modeled as the **By Pass resistor RBP**.



A cable has dimensions where dividing it up into small LC segments does not mean that a segment is not magnetically and electrostaticly coupled to its adjacent segments.



In this model, a Bypass resistor **RBP** seems to make things work well. Two models are being generated to match the slow and fast cable below. Cable length is not specified. The models assume 10cms.



```

XLRCG3  V3      V4      LRCG
XLRCG4  V4      V5      LRCG
XLRCG5  V5      V6      LRCG
XLRCG6  V6      V7      LRCG
XLRCG7  V7      V8      LRCG
XLRCG8  V8      V9      LRCG
XLRCG9  V9      V10     LRCG
XLRCG10 V10     V11     LRCG
XLRCG11 V11     V12     LRCG
XLRCG12 V12     V13     LRCG
XLRCG13 V13     V14     LRCG
XLRCG14 V14     V15     LRCG
XLRCG15 V15     V16     LRCG
XLRCG16 V16     V17     LRCG
XLRCG17 V17     V18     LRCG
XLRCG18 V18     V19     LRCG
XLRCG19 V19     V20     LRCG
ROUT    V20     0       50

```

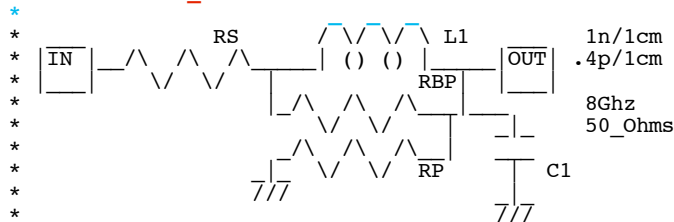
\*=====MODEL\_Cable2=====

```

RINB    VIN    V0B    50
CINB    V0B    0       1p
XLRCG0B V0B    V1B    LRCGB
XLRCG1B V1B    V2B    LRCGB
XLRCG2B V2B    V3B    LRCGB
XLRCG3B V3B    V4B    LRCGB
XLRCG4B V4B    V5B    LRCGB
XLRCG5B V5B    V6B    LRCGB
XLRCG6B V6B    V7B    LRCGB
XLRCG7B V7B    V8B    LRCGB
XLRCG8B V8B    V9B    LRCGB
XLRCG9B V9B    V10B   LRCGB
XLRCG10B V10B   V11B   LRCGB
XLRCG11B V11B   V12B   LRCGB
XLRCG12B V12B   V13B   LRCGB
XLRCG13B V13B   V14B   LRCGB
XLRCG14B V14B   V15B   LRCGB
XLRCG15B V15B   V16B   LRCGB
XLRCG16B V16B   V17B   LRCGB
XLRCG17B V17B   V18B   LRCGB
XLRCG18B V18B   V19B   LRCGB
XLRCG19B V19B   V20B   LRCGB
ROUTB   V20B   0       50

```

\*=====LRCG\_MODEL=====

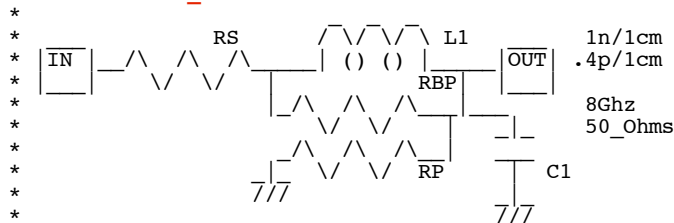


```

.SUBCKT  LRCG  IN    OUT
RS      IN    INS    3
RBP     IN    OUT    200
L1      INS   OUT    1n
C1      OUT   0       .4p
RP      OUT   0       8k
.ENDS    LRCG

```

\*=====LRCG\_MODELB=====



```

.SUBCKT  LRCGB  IN    OUT
RS      IN    INS    18
RBP     IN    OUT    200
L1      INS   OUT    1n
C1      OUT   0       0.4p
RP      OUT   0       3k
.ENDS    LRCGB

```

```
.control
set      pensize = 2
*AC      DECLin NUMDEC FSTART FSTOP  TRAN  TSTEP  TSTOP  TSTART TMAX  ?UIC?
ac       dec    10     .1G   5G
plot     db(v10)      db(v10b)  ylimit -20 0

.endc
.end
```

```
4.4.11_10.22AM
dsauersanjose@aol.com
åDon Sauer
```