**+ + - + - + - + - -**

**+ - + - + - + -+ -**

**+ + - + - + - +- -**

**- + - + - + - + - +**

**+ - + - + - + - + -**

**- + - + - + - + - +**

**uz,I di**

**waves: oval window <=> round window**

**Plasma Oscillator**

**RPO LPO CPO**

**0 mV CPH**

**RPH LPH**

**rPH EPH**

**80 mV**

**150 mV**

**RRM LRM**

**CRM**

Fig. 5. Mechatronics and electromagnetic equivalent circuit of quasi plasma oscillation of the hair cells. E: biological power; R(r): resistor; C: capacitor; L: inductor; + and - : positive and negative charges; Plasma Oscillator (PO): Hair Cell Plasma; PH: Plasma Holder (cell membrane); RM: Reissner’sMembrane. Spiral ganglions carry assumed output electric signals from the cells to the brain; assumed input signals are electromagnetic and mechanic waves from scalae tympani to the cells. Components or circuits of Scalae Media and Tympani are assumed to be minor and not shown here, to simplify our modeling illustration. The others are the same as that in Fig. 3 or 4. See the text. The draw is not to scale.