

## Claims

1. A nanopore measurement circuit (2200) comprising:
  - a nanopore electrode (2214);
  - a first analog memory (2208), wherein the first analog memory is a first capacitor;
  - a second analog memory (2210), wherein the second analog memory is a second capacitor; and
  - a switch network comprising first and second switches adapted to selectively connect the nanopore electrode to at least one of the first analog memory and the second analog memory, respectively, for charging of the connected analog memory (2208, 2210) by, and discharging of the connected analog memory (2208, 2210) through, the nanopore electrode (2214);
  - output circuitry adapted to read out the voltage values stored in the first analog memory and second analog memory, wherein the output circuitry includes a first switch adapted to selectively connect the first analog memory to comparison circuitry and a second switch adapted to selectively connect the second analog memory to the comparison circuitry,
  - and the comparison circuitry, wherein the comparison circuitry is adapted to be provided with the outputted voltage values from said output circuitry in order to calculate a difference value from the provided voltage values;
  - wherein the switch network further comprises: first (2216) and second (2220) pre-charge switches for connecting the first (2208) and second (2210) analog memories, respectively, to a voltage source (2212);
  - wherein the first (2216) and second (2220) pre-charge switches are configured to close to pre-charge the first and second capacitors, respectively, to a voltage level of the voltage source (2212); and open to begin the charging or discharging of the connected analog memory (2208, 2210) to capture a measurement sample in the connected analog memory (2208, 2210);
  - wherein the switch network selectively stores a first electrical value corresponding to a first measurement sample of a nanopore in the first analog memory and the switch network selectively stores a second electrical value corresponding to a second measurement sample of the nanopore in the second analog memory;
  - wherein the first analog memory and the second analog memory store nonconsecutive nanopore electrical measurement samples obtained nonconsecutively.
2. The circuit of claim 1, wherein the comparison circuitry includes an analog-to-digital converter.
3. The circuit of claim 1, wherein the comparison circuitry includes a comparator.
4. The circuit of claim 1, wherein the comparison circuitry outputs a first digital value of a difference between the first analog memory and the second analog memory, a second digital value of an absolute electrical value of the first analog memory, and a third digital value of an absolute electrical value of the second analog memory.