

SAVE Dict of Electronics Glaser 1470

remains unchanged but the atomic number changes by (a) +1; with negative  $\beta$ -particle emission or (b) -1; with positron emission or electron capture. Also known as beta decay.

**beta-disintegration energy.** For negatron emission it equals the sum of the kinetic energies of the beta-particle, the neutrino and the recoil atom. In the case of positron emission there is in addition the energy equivalence of two electron rest masses.

**beta-ell or  $\beta_l$ .** Continental expression for the total attenuation, in nepers, of a line of length  $l$  and attenuation constant  $\beta$  nepers per unit length (km or mile) for any frequency.

**beta-particle.** A negatron or a positron emitted from a nucleus during beta decay.

**beta-ray spectrometer.** One which determines the spectral distribution of energies of beta-particles from radioactive substances or secondary electrons.

**beta-rays.** Streams of  $\beta$ -particles.

**beta thickness gauge.** Thickness-measuring instrument, based on absorption of beta-particles from radioactive source.

**beta wave.** High-frequency wave (15-60 Hz) produced in human brain.

**betatopic.** Said of atoms differing in atomic number by one unit. One atom can be considered as ejecting an electron ( $\beta$ -particle) to produce the other one.

**betatron.** Accelerator for high-energy beams of electrons and consequently very highly penetrating X-rays. Electrons are accelerated by a rapidly changing magnetic field, orbit being of constant radius. Also induction accelerator, rheotron. See cyclotron.

**Bethe hole.** Arrangement for tapping off power from a waveguide by attaching a tube at a reverse angle.

**Bethenod-Latour alternator.** High-frequency alternator in which alternating currents in the stator generate currents of higher frequency in the rotor. By repeating the process, frequencies of the order of 100 kHz have been attained in a single machine.

**BeV.** U.S. abb. for billion-electron-volt; see GeV.

**Bevatron.** Accelerator at Berkeley University in California, used to accelerate protons and other atomic particles up to 6 GeV.

**Beverage antenna.** See wave antenna.

**bias.** (1) Adjustment of a relay so that it operates for currents greater than a given current (against which it is biased), or for a current of one polarity. (2) In a computer, the average of random errors when these are not balanced about zero error. See: alternating-current-direct-current-automatic-grid-line-cathode.

**bias current.** Non-signal current supplied to electrode of semiconductor device; magnetic amplifier, tape recorder, etc., to control operation at optimal working point.

**bias resistor.** That used in cathode-bias circuit.

**bias voltage.** Generally non-signal or mean potential of any electrode in a thermionic tube, measured with reference to the cathode. Specially applied to that of control grid.

**bias winding.** Transformer or choke winding, current in which controls the operating point on the magnetic circuit.

**blasing.** Polarization of a recording head in magnetic-tape recording, to improve linearity of amplitude response, using d.c. or a.c. much higher than the maximum audio frequency to be reproduced.

**Blax.** Minute computer element of ferrite, utilizing flux interaction between normal magnetic fields, established by wires through orthogonal holes.

**biaxial crystal.** One which has two optical axes and relevant physical properties.

**biconical horn.** Two flat cones apex to apex for radiating uniformly in horizontal directions when driven from a coaxial line.

**bidirectional microphone.** One, such as the normal open ribbon pressure-gradient microphone, which is most sensitive in both directions along one axis.

**bifilar resistor.** One wound with two wires in parallel, to reduce inductance and to balance capacitive effects at high frequencies.

**bifilar winding.** One used for non-inductive coils, in which the current passes through two wires side-by-side, in opposite directions, so that their outer magnetic field is largely balanced. Used for resistors in radio circuits.

**bigrid valve.** Four-electrode thermionic tube with two control grids, each having approximately the same control on the anode current. Used as a modulating or mixing valve, or as an amplifier operating with low anode voltages.

**bilateral impedance.** Any electrical or electro-mechanical device in which power can be transmitted in both directions.

**billicapacitor.** Variable capacitor, having maximum capacitance of a few micro-microfarads, used for fine tuning adjustments.

**billion-electron-volt.** See BeV.

**bimetallic strip.** Strip of two metals having different temperature coefficients, so arranged that the strip deflects when subjected to a change in temperature; used in thermal switches.

**bimorph.** Unit in microphones and vibration detectors in which two piezoelectric plates are cemented together in such a way that application of p.d. causes one to contract and the other to expand, so that the combination bends, as in a bimetallic strip.

**binary.** Involving the integer 2; see binary scale.

**binary arithmetic.** Arithmetical operations carried out on binary scale (q.v.).

**binary cell.** An information storage element used in computer work which can have one or other of two stable states.

**binary-coded decimal system.** Scheme of computation whereby decimal numbers are