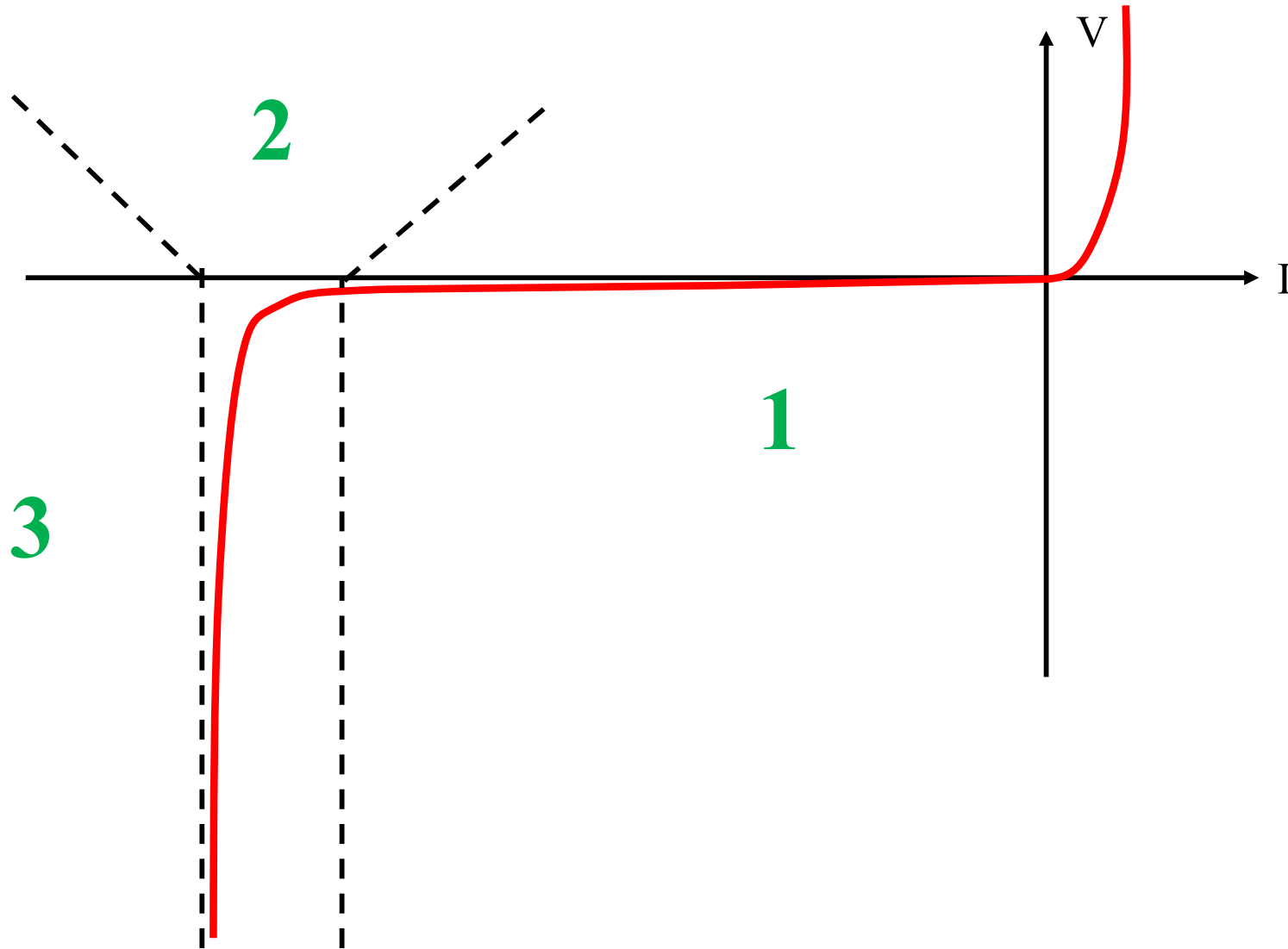
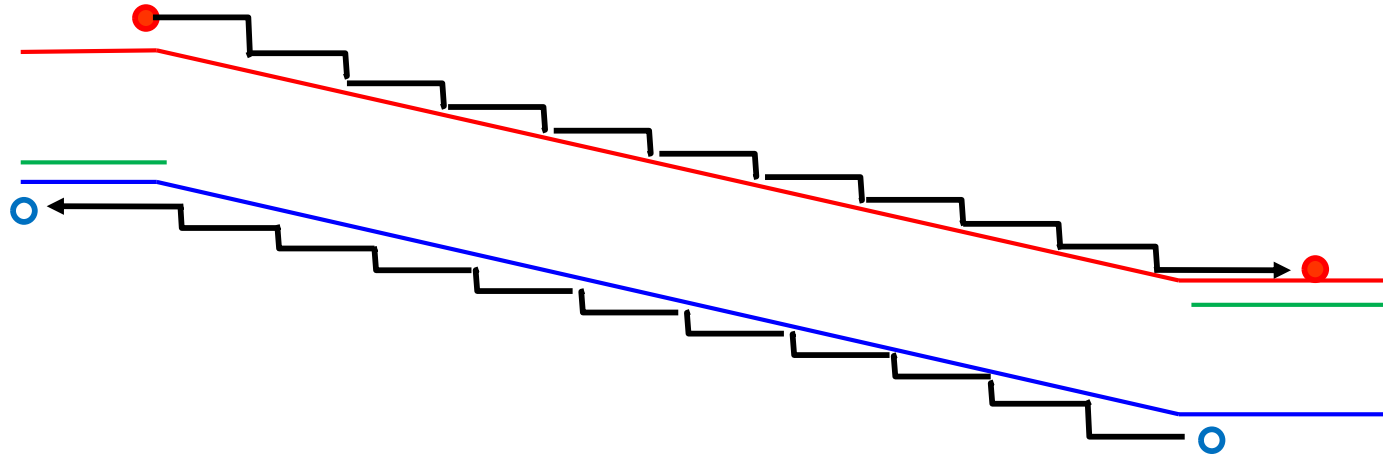


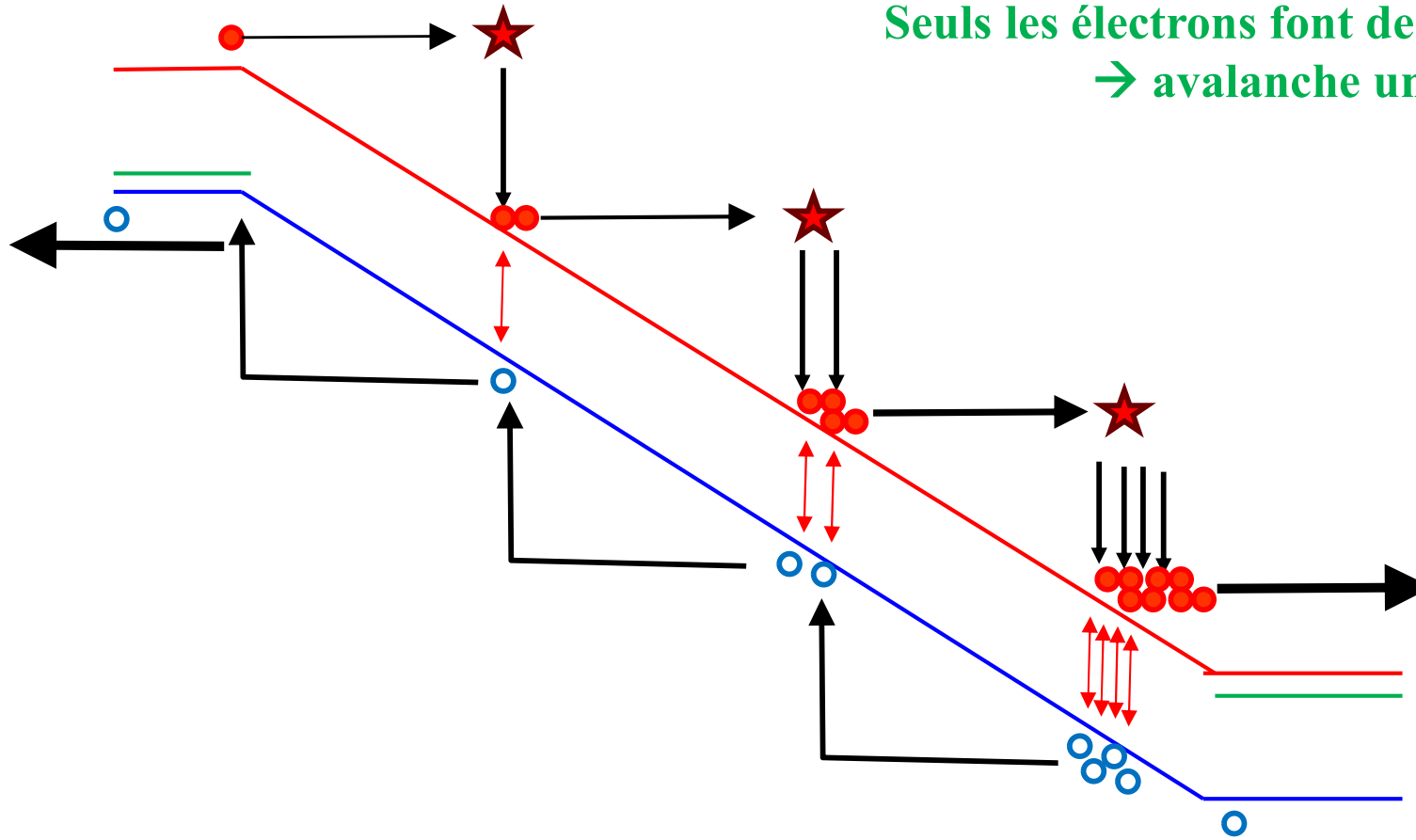
Diode avalanche

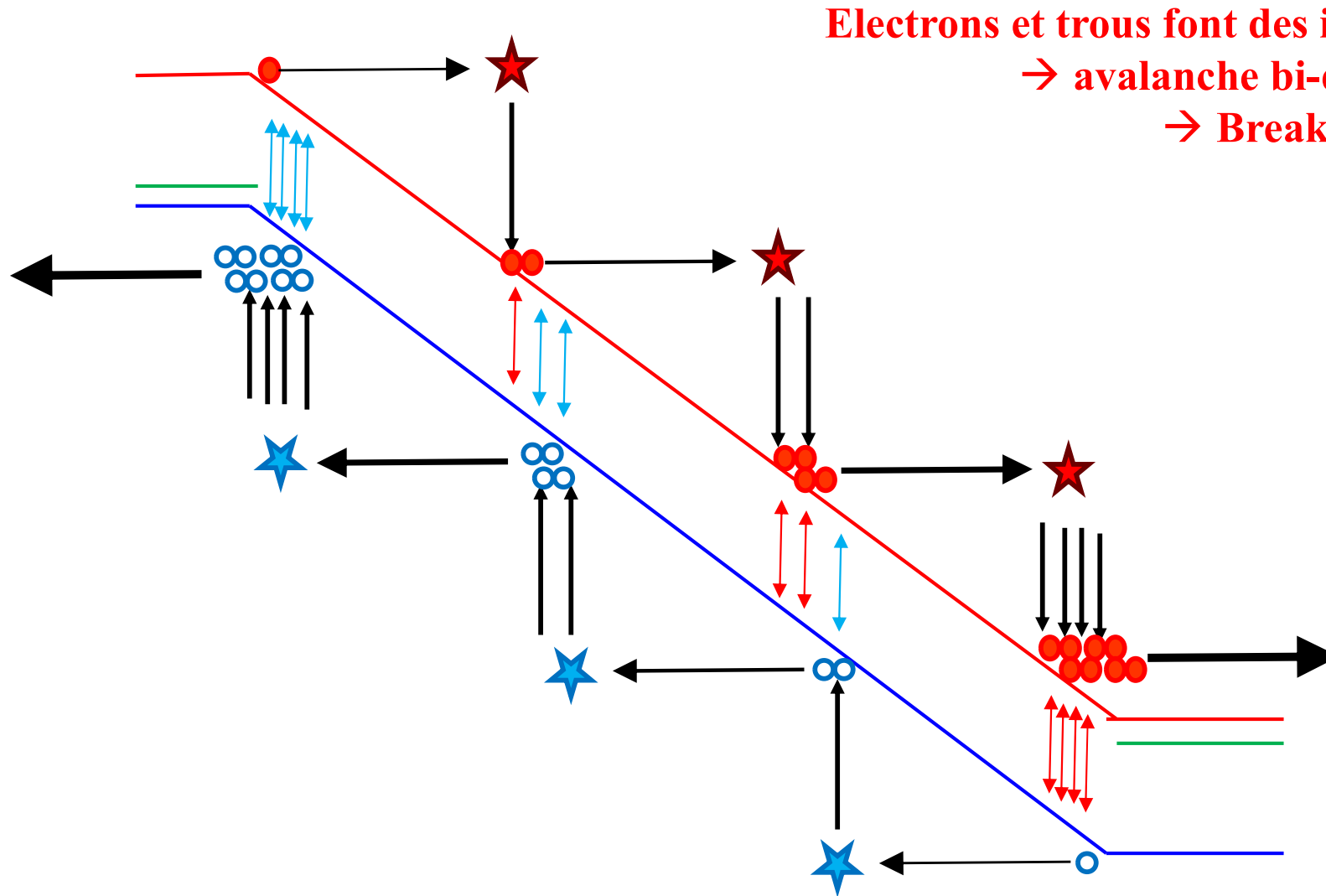
Courbe I(V) d'une diode en mode reverse





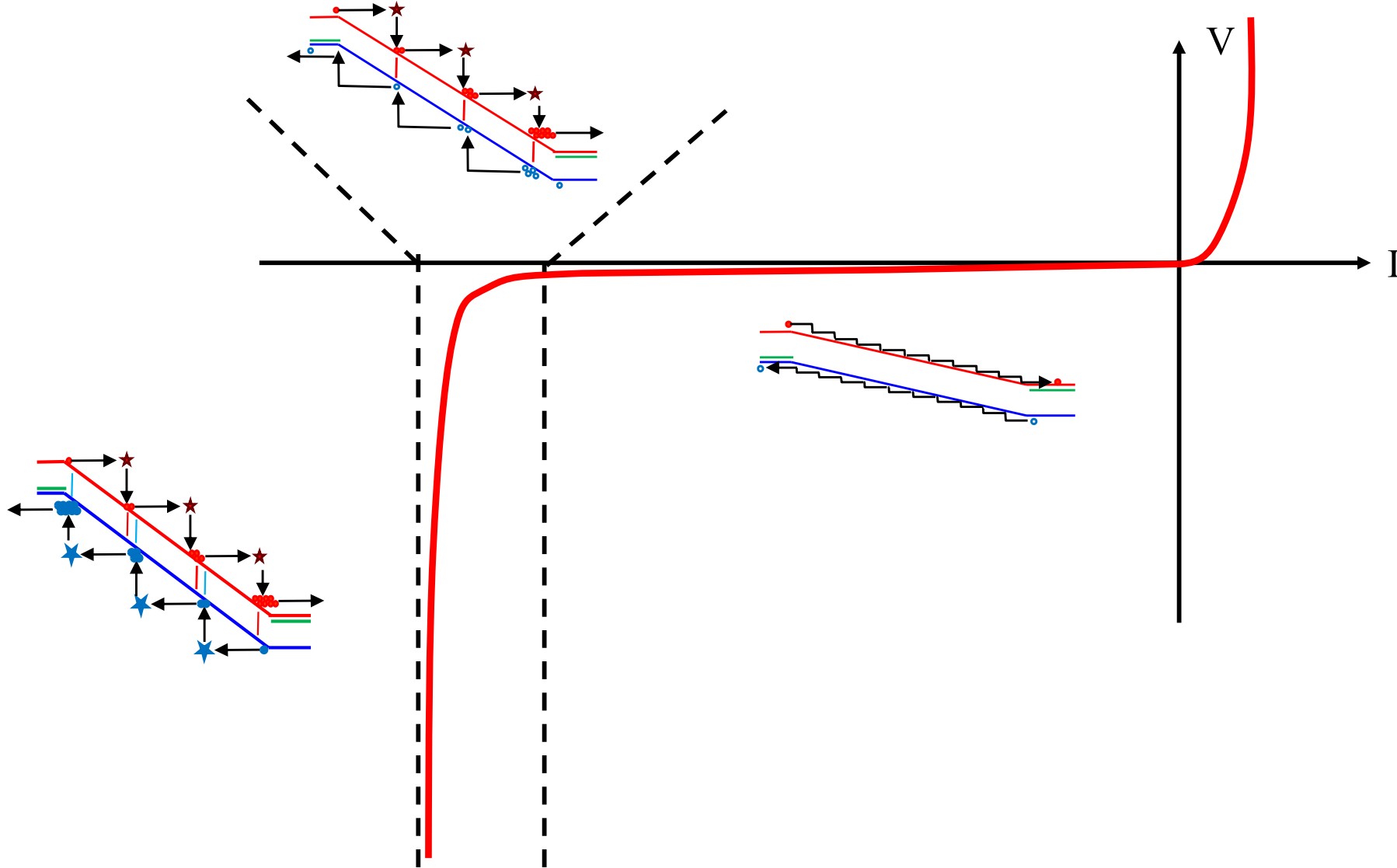
Seuls les électrons font des ionisations par impact !
 → avalanche uni-directionnelle





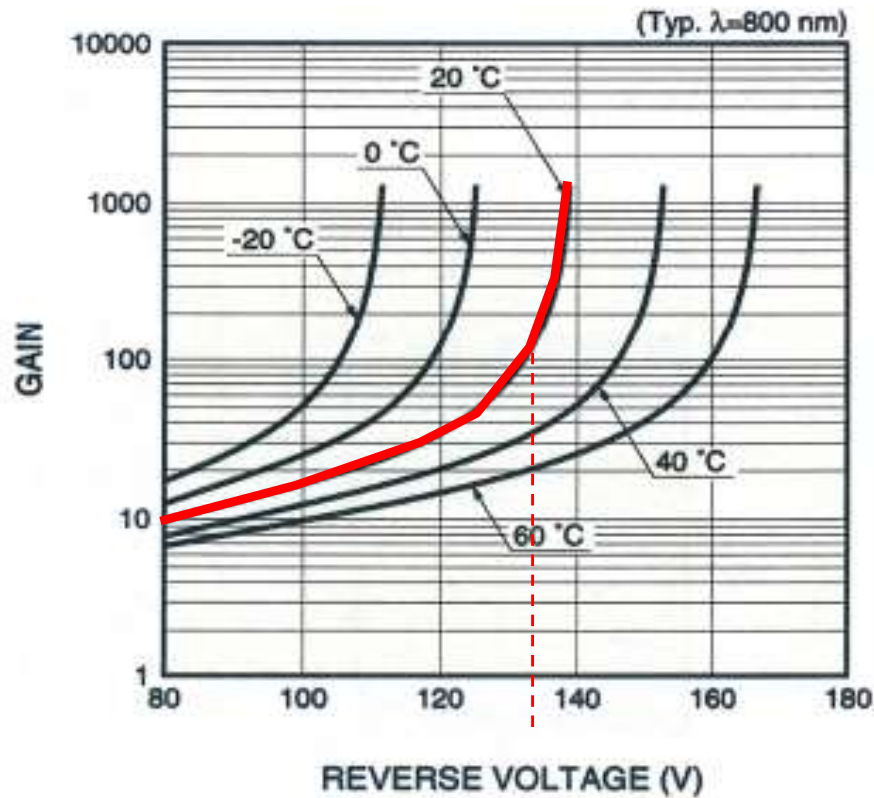
Electrons et trous font des ionisations par impact !
→ avalanche bi-directionnelle
→ Breakdown

Courant avalanche: courbe I(V)



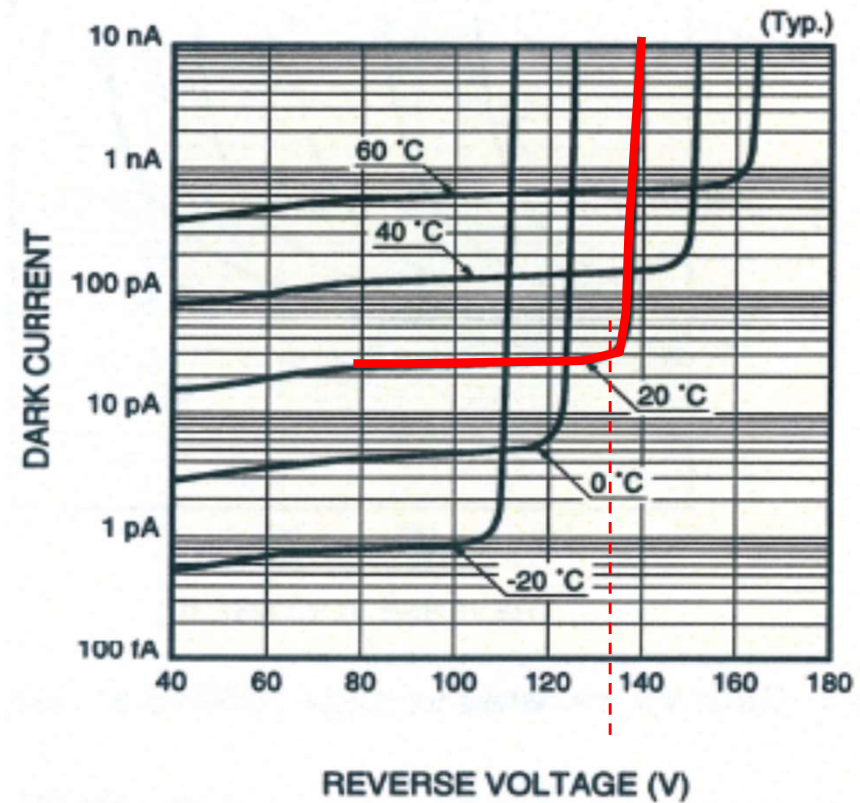
Avalanche Photo-Diode (APD)

Gain



Typically: 100

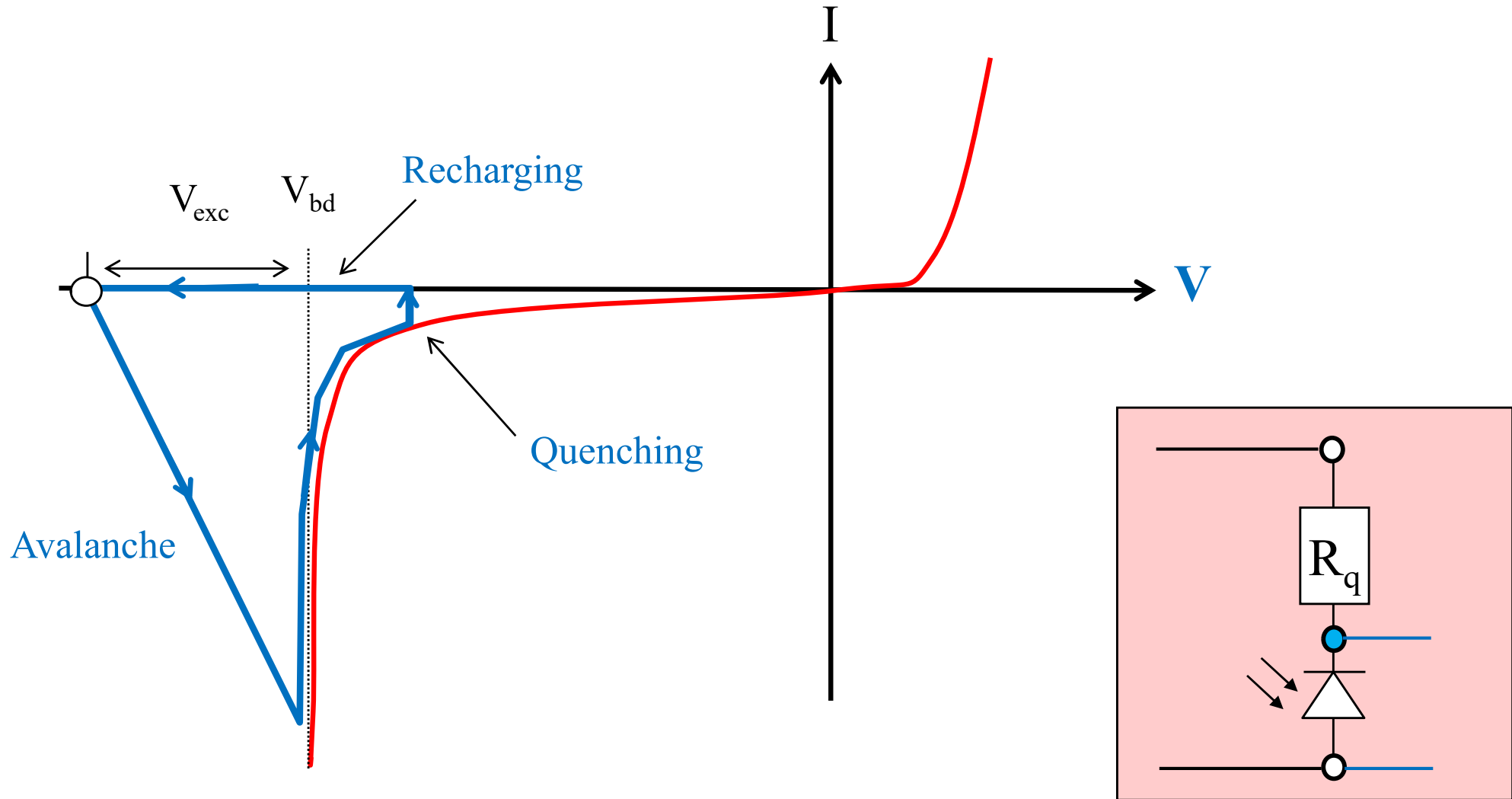
Dark Current



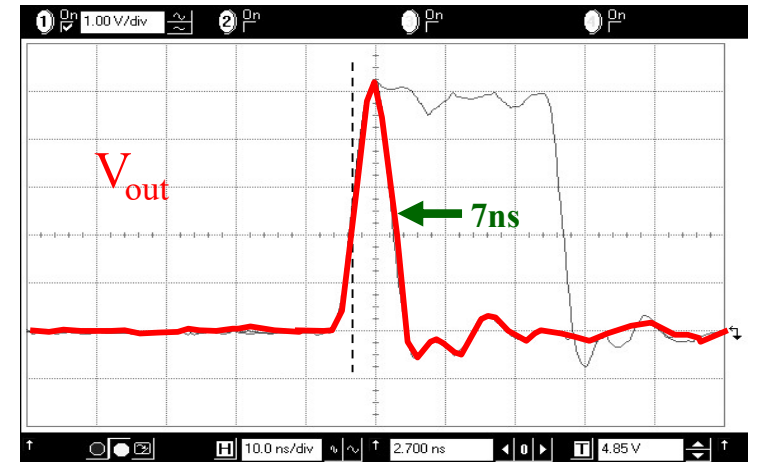
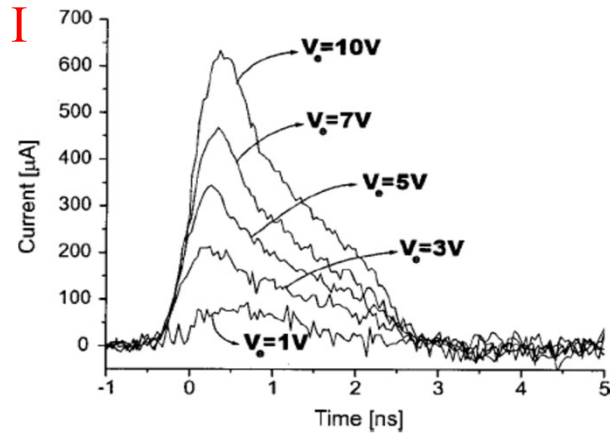
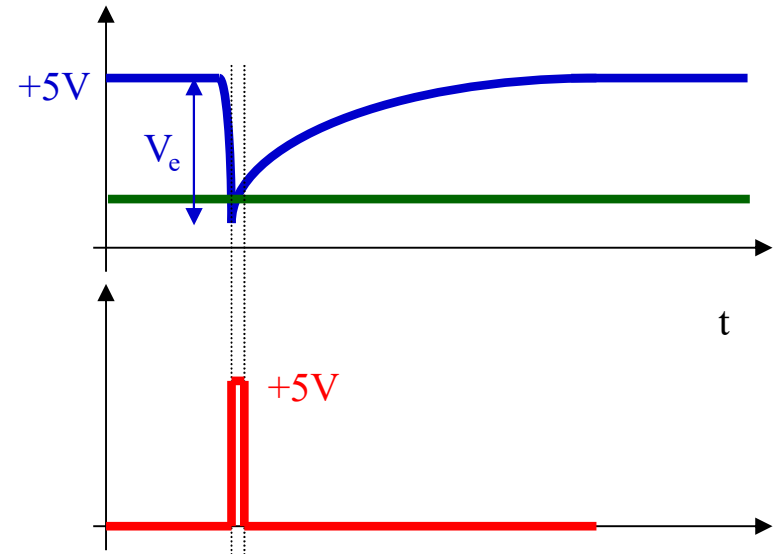
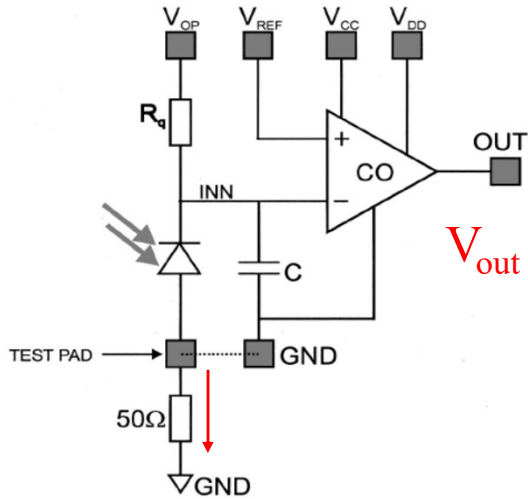
Typically: 10-100 pA

Hamamatsu
SI APD series S238x

SPAD: Single Photon Avalanche Diode: Working Principle



SPAD: Current and Voltage Pulses



A. Rochas, Rev. Scien. Instr., Vo. 74, No. 7, 2003, pp. 3263 ...

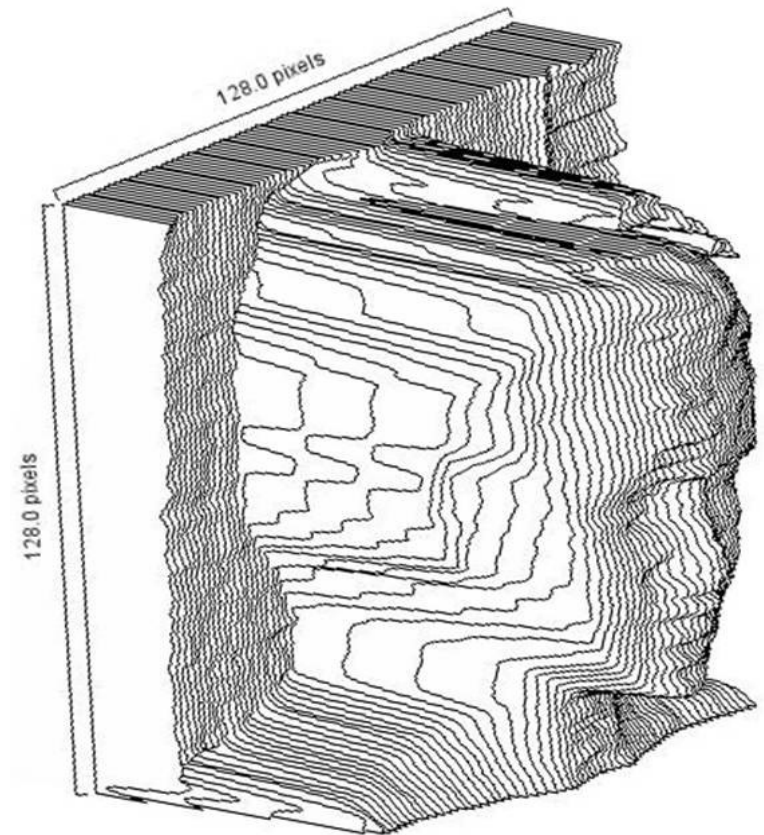
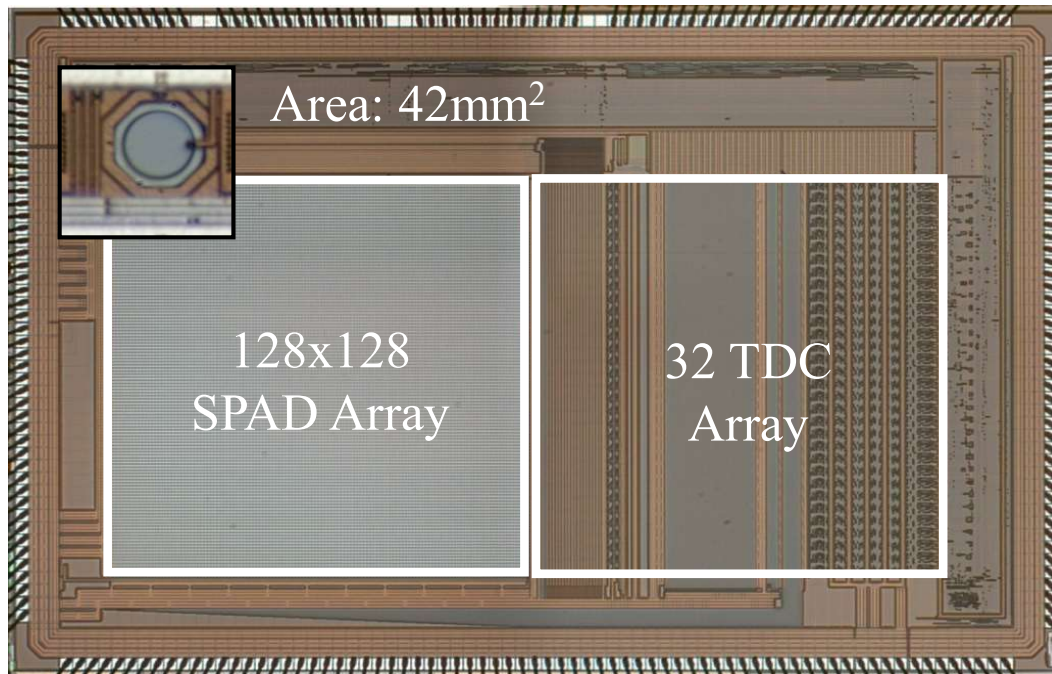
A. Rochas, ICAPT 2002



Technical characteristics

Laser diode	635 nm
Laser class	2
Measurement range	0,15 – 15,00 m
Precision (common)	± 3,0 mm
Measurement time (common)	0,5 s
Measurement time (max)	4 s
Battery	2 x 1,5-V-LR03 (AAA)
Automatic standby	5 min
Weight	0,08 kg

http://www.bosch-do-it.com/ch/fr/bricoleur/outils/plr-15-3165140765541-199929.jsp#tab_technical



C. Niclass, thèse EPFL No. 4161, 2008.