

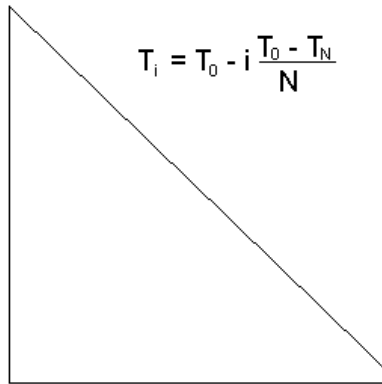
$\beta\tau\lambda$	<h1>Simulated Annealing Cooling Schedules</h1> <p>Brian T. Luke, Ph.D.</p>	$\beta\tau\lambda$
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Figure 1: Various cooling schedules that can be used with a Simulated Annealing optimization. T_i is the temperature for cycle i , where i increases from 0 to N . The initial and final temperatures, T_0 and T_N respectively, are determined by the user, as is N .

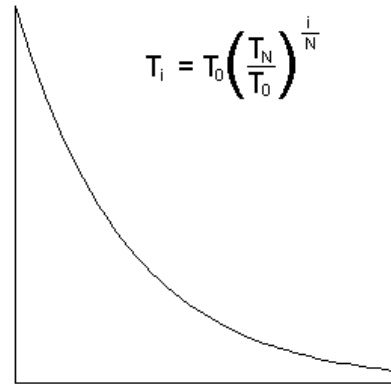
Cooling Schedule 0

$$T_i = T_0 - i \frac{T_0 - T_N}{N}$$



Cooling Schedule 1

$$T_i = T_0 \left(\frac{T_N}{T_0} \right)^{\frac{i}{N}}$$

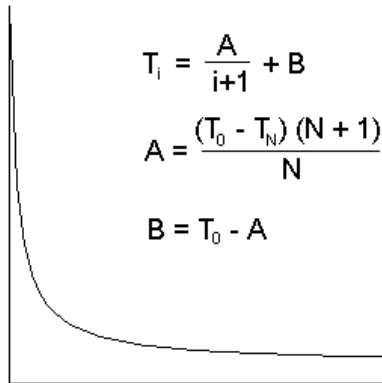


Cooling Schedule 2

$$T_i = \frac{A}{i+1} + B$$

$$A = \frac{(T_0 - T_N)(N+1)}{N}$$

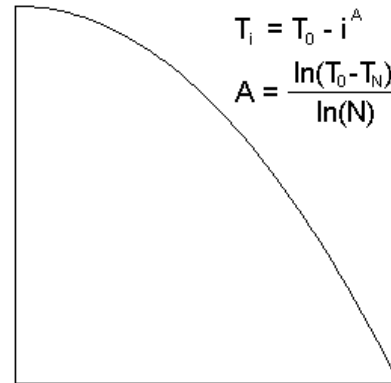
$$B = T_0 - A$$



Cooling Schedule 3

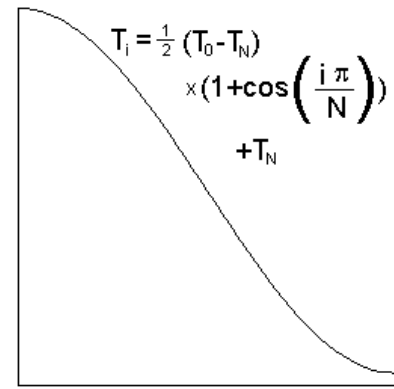
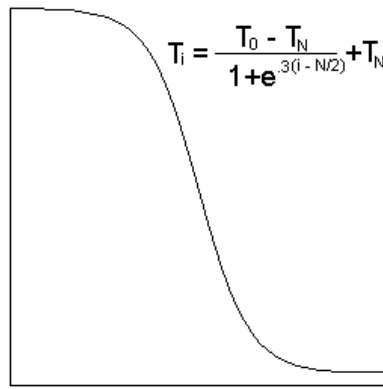
$$T_i = T_0 - i^A$$

$$A = \frac{\ln(T_0 - T_N)}{\ln(N)}$$

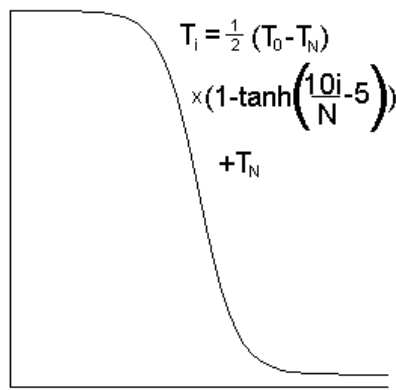


Cooling Schedule 4(sigmoid)

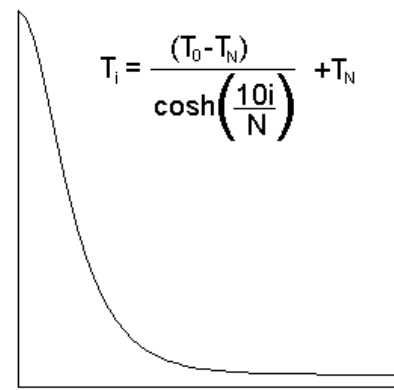
Cooling Schedule 5



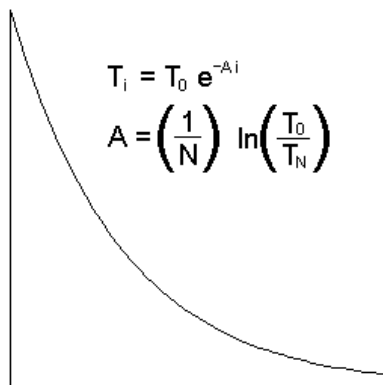
Cooling Schedule 6



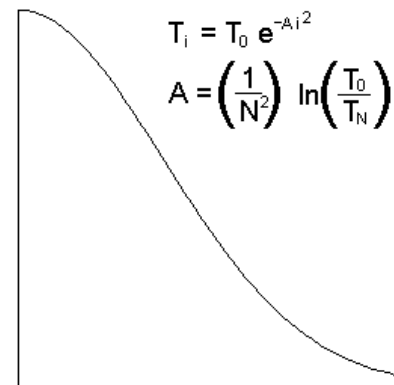
Cooling Schedule 7



Cooling Schedule 8



Cooling Schedule 9



Return to [Simulated Annealing](#).