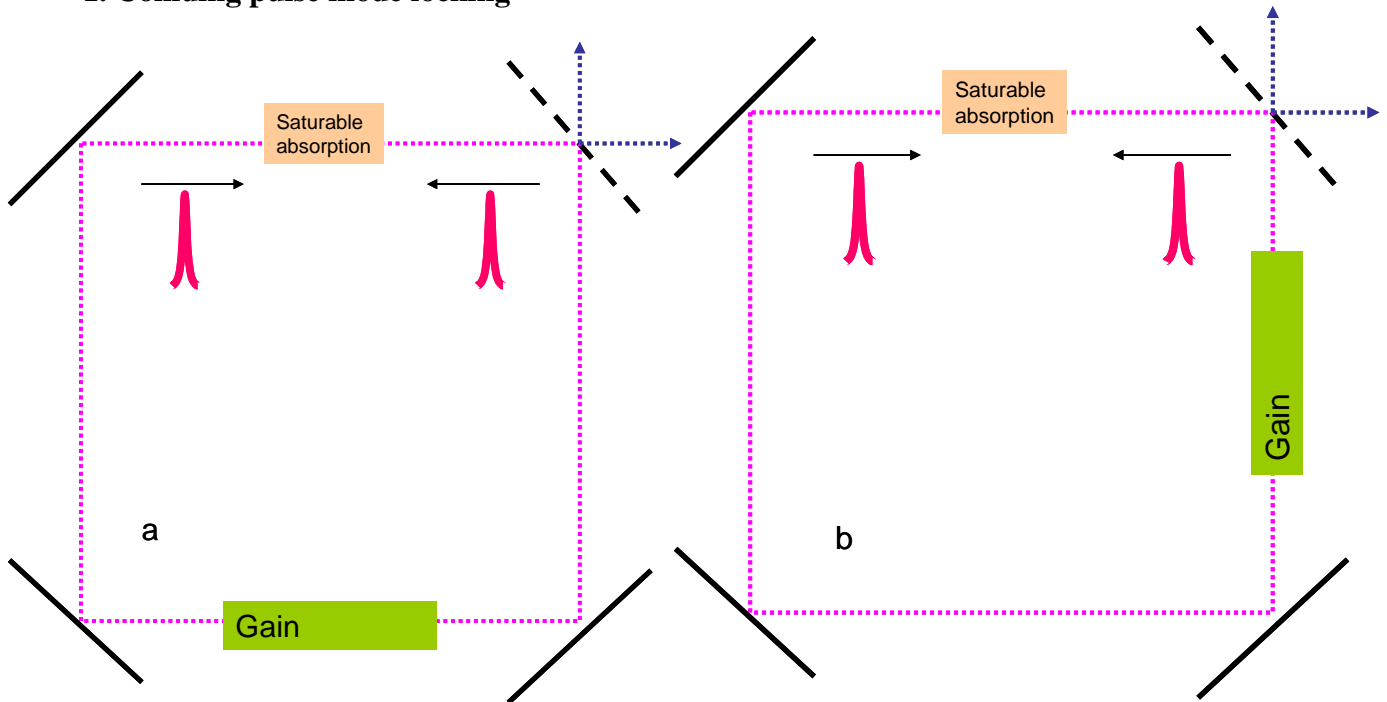


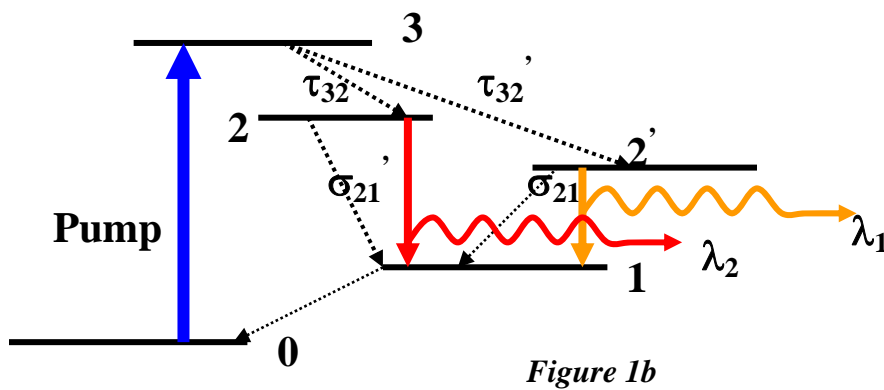
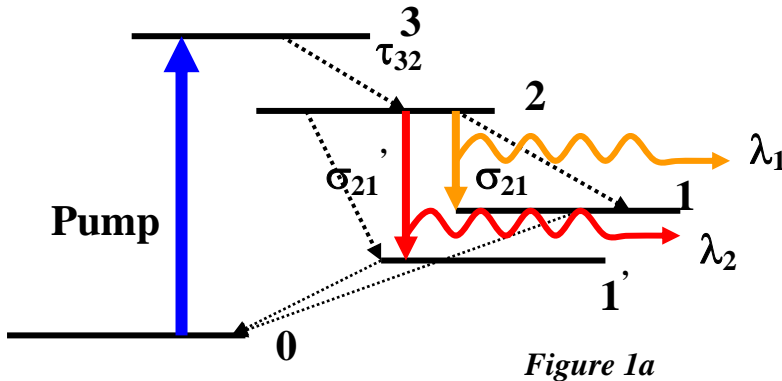
1. Colliding pulse mode locking



In colliding pulse mode-locking two pulses counter-propagate in a ring cavity so when they coincide on the saturable absorption loss is reduced. Which of the two configurations a and b is preferable to implement mode locking? Remember that gain also saturates.

2 Two-color laser.

Consider two lasing media shown in Figs. 1a and 1b. In Fig 1a two lasing transition share a common upper level and in Fig.1 b they share a common lower level. Which scheme in your opinion is more suitable for obtaining lasing at two different wavelengths? Why? Write the rate equations, if you can and determine thresholds for each color.



3 Mode locking vs Q-switching

You have a laser that produces a repetitive train of short pulses. How can you tell whether you have Q-switched or Mode-locked laser. What instrument would you need?