of various *clusters* over time. Multiple model algorithms serve a similar purpose for model based approaches: they are responsible for maintaining beliefs for the probability of each maneuver. The algorithm we discussed is called the **Autonomous Multiple Model** algorithm (AMM). AMM can be summarized with this equation:

$$\mu_k^{(i)} = \frac{\mu_{k-1}^{(i)} L_k^{(i)}}{\sum_{j=1}^{M} \mu_{k-1}^{(j)} L_k^{(j)}}$$

or, if we ignore the denominator (since it just serves to normalize the probabilities), we can capture the essence of this algorithm with

$$\mu_k^{(i)} \propto \mu_{k-1}^{(i)} L_k^{(i)}$$

where the $\mu_k^{(i)}$ is the probability that model number i is the correct model at time k and $L_k^{(i)}$ is the **likelihood** for that model (as computed by comparison to process model).

The paper, "A comparative study of multiple model algorithms for maneuvering target tracking" is a good reference to learn more.

2.4 Trajectory Generation

Trajectory generation is straightforward once we have a process model. We simply iterate our model over and over until we've generated a prediction that spans whatever time horizon we are supposed to cover. Note that each iteration of the process model will necessarily add uncertainty to our prediction.

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