Structural Reliability
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Lecture –103
Representation of Systems (Part -07)

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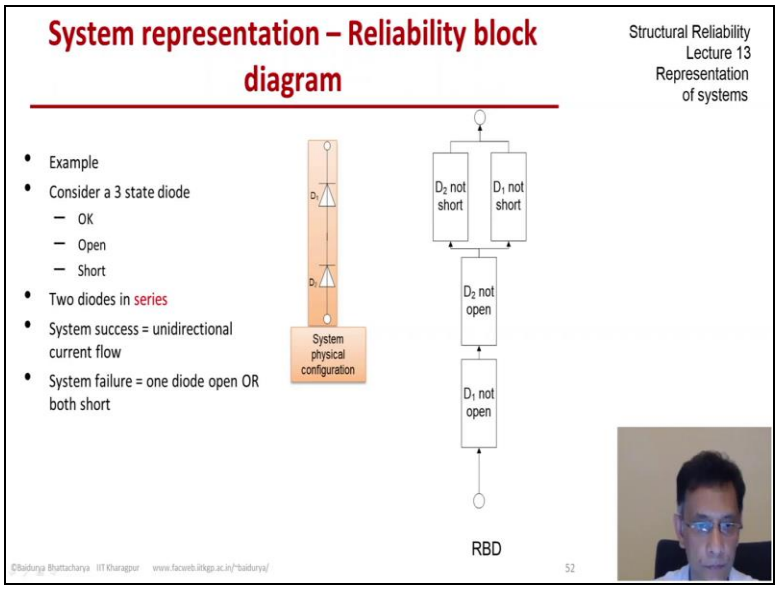

Let us look at next at a system composed of three state elements this is what we looked at last week and let us see if we can come up with an RBD for such a system. It will be a have to be a little creative in order to draw the RBD for this system. So, there are two diodes in series each diode has three states one functioning state and one open fail state and one short fail state. So, system success as we had before is unit direction current flow and so, system would fail if one diode is open or both have shorted.

So, with that in mind let us try to build up uh the RBD. So, the first element that we define is a success element. So, D 1 is not open. So, that is an essential requirement for the system to be okay. So, D 1 is not open that's in series with D 2 not open. So, these two are essential and then we can live with one of them being shot but not both of them. So, then we at the end we bring in D 2 not short and D 1 not short in parallel for the system to survive.

So, D 2 not short D 1 not shot together with each of them not open in series would be the uh and an appropriate RBD for this system which has three state elements.

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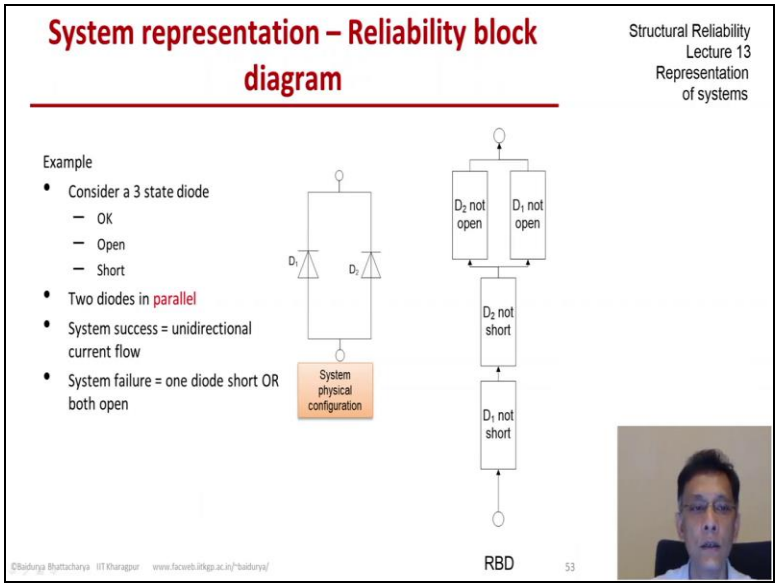

We can do this similar thing for those two diodes in parallel. So, here the system failure would be if one diode is short or both are open. So, that those events constitute system failure. So, let us see if we can come up with the RBD uh for this system if you would like to pause the video and come up with your solution please do. So, otherwise that we present the solution D 1 not short is now a series element D 2 not short is another series element and then in parallel we have D 1 not open and D 2 not open. So, that is how I would draw the RBD for a system with three state elements you.