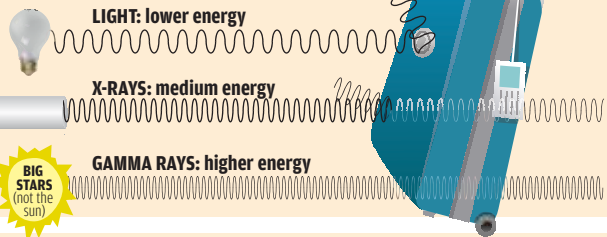
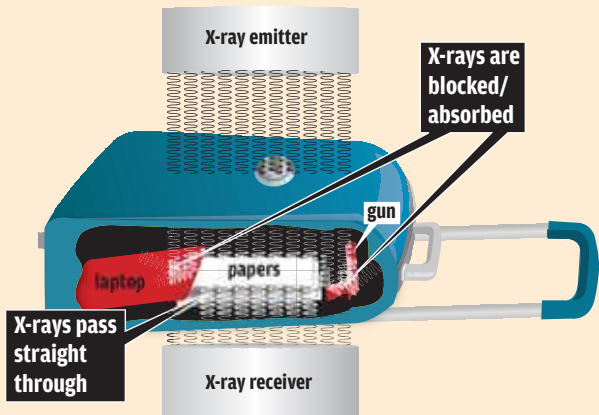


# NEW SCANNING TECHNOLOGY: A peek inside the workings of Diffraction-based X-ray Imaging (DEXI).

**X-RAYS ARE WAVES**, just like light only with more energy. Lower energy waves get blocked or absorbed by solid objects. High energy waves pass through them. X-rays sit in between.



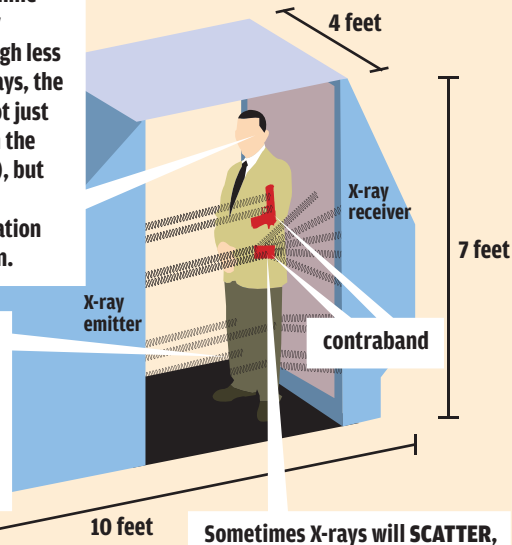
**SCANNING YOUR LUGGAGE** is very similar to taking an X-ray of a broken bone. A suitcase is bombarded with X-rays, which pass through less dense materials such as leather, plastic and paper. More dense material, such as metal, absorb the rays. This provides security personnel a glimpse inside.



**SCANNING A HUMAN BODY IS DIFFERENT**, because the levels and type of radiation used for luggage are too much to administer without a doctor's supervision. The solution is using a more limited spectrum of higher-energy radiation (which is less likely to be absorbed by the body).

A person steps into the machine and is bombarded with very tightly focused X-rays. Though less sensitive than standard X-rays, the DEXI computers measure not just where X-rays travel through the body (the standard method), but also how they travel. These methods yield more information using 50 times less radiation.

Sometimes X-rays bend as they pass through objects, such as the body's soft tissue. How much they bend can help determine the makeup of an object.



Sometimes X-rays will **SCATTER**, like light through a window prism. This usually happens when powdery substances or low-density plastics (e.g., explosives) are encountered.

## WHAT DEXI SEES:



SOURCE: DANIEL FOGARTY, NESCH LLC  
RYAN MARX | THE TIMES