- Slide 6-112: The superfluous second equality sign on the bottom displayed equation has been removed.
- Slide 6-113: The page index of 5-113 should be 6-113.
- Slide 6-120: To make it more specific, I add "for $nT_b \le t < (n+1)T_b$", two places.
- Slide 6-121: To make my intension more clear, I replace "The passband signals respectively for $I_n = -1$ and $I_n = +1$ are coherent orthogonal" with "The passband signals respectively for $I_n = -1$ and $I_n = +1$ are better to be coherent orthogonal."
- Slide 6-122: A plus sign is inserted between $\delta\left(f - \frac{1}{2T_b}\right)$ and $\delta\left(f + \frac{1}{2T_b}\right)$.
- Slide 6-122: To make it more specific, I add "for $nT_b \le t < (n+1)T_b$".
- Slide 6-123: The page index of the slide should be 5-123 instead of 6-123.
- Slide 6-123: To make it more specific, I add "for $nT_b \le t < (n+1)T_b$". In addition, at the bottom line, I replace

  $$\left(\prod_{k=0}^{n} I_k\right) \times I_n e^{j(\pi/2)\left[\left(\frac{t-nT_b}{T_b}\right)+n\right]}$$

  by

  $$\left(\prod_{k=0}^{n-1} I_k\right) \times e^{j(\pi/2)\left[\left(\frac{t-nT_b}{T_b}\right)+n\right]}.$$

  (Note that these two expressions are actually equivalent.)
- Slide 6-124: Results of $I_0 e^{j(\pi/2)}$ are given. Indications are added to clarify that the first two columns are from textbook, which should be an accumulated phases.
- Slide 6-126∼6-130: The page indices of 5-126∼5-130 should be 6-126∼6-130.
- Slide 6-132∼6-133: The page indices of 5-132∼5-133 should be 6-132∼6-133.

- Slide 6-135~6-137: The page indices of 5-135~5-137 should be 6-135~6-137.

- Slide 6-140: The definite of $\tilde{s}(t)$ and $g(t)$ should be refined as:

$$\tilde{s}(t) = \sum_{\ell=-\infty}^{\infty} \left[\tilde{I}_{2\ell-1} \cdot g(t-(2\ell-1)T_b) \cdot +j\tilde{I}_{2\ell} \cdot g(t-2\ell T_b)\right]$$

  and

$$g(t) = \begin{cases} \sqrt{\dfrac{2E_b}{T_b}} \sin\left(\dfrac{\pi t}{2T_b}\right), & 0 \le t < 2T_b \\ 0, & \text{otherwise} \end{cases}$$

  With the refined definitions, we can therefore claim that

$$\bar{S}_B(f) = 2\left(\frac{1}{2T_b}\right) G(f)G(-f) = \frac{32E_b}{\pi^2}\left[\frac{\cos(2\pi T_b f)}{16T_b^2 f^2 - 1}\right]^2.$$

  The details for the derivation of $\bar{S}_B(f)$ can be found below.

$$
\begin{aligned}
G(f) &= \int_0^{2T_b} \sqrt{\frac{2E_b}{T_b}} \sin\left(\frac{\pi t}{2T_b}\right) e^{-j2\pi ft} dt \\
&= \int_0^{2T_b} \sqrt{\frac{2E_b}{T_b}} \frac{1}{2j} \left(e^{j\pi t/(2T_b)} - e^{-j\pi t/(2T_b)}\right) e^{-j2\pi ft} dt \\
&= \frac{1}{2j}\sqrt{\frac{2E_b}{T_b}} \left(\int_0^{2T_b} e^{-j2\pi t[f-1/(4T_b)]} dt - \int_0^{2T_b} e^{-j2\pi t[f+1/(4T_b)]} dt\right) \\
&= \frac{1}{2j}\sqrt{\frac{2E_b}{T_b}} \left(\frac{\sin(2\pi[f-1/(4T_b)]T_b)}{\pi[f-1/(4T_b)]} e^{-j2\pi[f-1/(4T_b)]T_b}\right. \\
&\quad \left. - \frac{\sin(2\pi[f+1/(4T_b)]T_b)}{\pi[f+1/(4T_b)]} e^{-j2\pi[f+1/(4T_b)]T_b}\right) \\
&= \frac{1}{2j}\sqrt{\frac{2E_b}{T_b}} \left(\frac{\sin(2\pi fT_b - \pi/2)}{\pi(4fT_b-1)/(4T_b)} e^{-j2\pi fT_b} e^{j\pi/2} - \frac{\sin(2\pi fT_b + \pi/2)}{\pi(4fT_b+1)/(4T_b)} e^{-j2\pi fT_b} e^{-j\pi/2}\right) \\
&= \frac{1}{2j}\sqrt{\frac{2E_b}{T_b}} \left(\frac{-\cos(2\pi fT_b)}{\pi(4fT_b-1)/(4T_b)} e^{-j2\pi fT_b} e^{j\pi/2} - \frac{\cos(2\pi fT_b)}{\pi(4fT_b+1)/(4T_b)} e^{-j2\pi fT_b} e^{-j\pi/2}\right) \\
&= \frac{1}{2j}\sqrt{\frac{2E_b}{T_b}} \frac{j\cos(2\pi fT_b)}{\pi/(4T_b)} e^{-j2\pi fT_b} \left(\frac{1}{1-4fT_b} + \frac{1}{1+4fT_b}\right) \\
&= \sqrt{\frac{2E_b}{T_b}} \frac{4T_b\cos(2\pi fT_b)}{\pi(1-16f^2T_b^2)} e^{-j2\pi fT_b},
\end{aligned}
$$

where

$$
\begin{aligned}
\int_0^T e^{-j2\pi ft} dt &= \left.\frac{1}{-j2\pi f} e^{-j2\pi ft}\right|_0^T \\
&= \frac{1}{-j2\pi f} e^{-j2\pi fT} - \frac{1}{-j2\pi f} \\
&= \frac{1}{j2\pi f} e^{-j\pi fT} \left(e^{j\pi fT} - e^{-j\pi fT}\right) \\
&= \frac{\sin(\pi fT)}{\pi f} e^{-j\pi fT}.
\end{aligned}
$$

This concludes to:

$$
G(f)G(-f) = T_b \frac{32E_b}{\pi^2} \frac{\cos^2(2\pi fT_b)}{(1-16f^2T_b^2)^2}.
$$

- Slide 6-148: The cross reference should be 6-138 instead of 6-139.
- Slide 6-153: The derivation has been modified.
- Slide 6-155: The box containing "$h = 1/2$ and continuous phase" is removed.
- Slide 6-158: s_i is replaced with s_k in the first line. $s(t)$ is replaced with $s_k(t)$ in the second line. s_i is replaced with $s_{i,k}$ in both third and forth lines.
- Slide 6-159: dt is missing at the end of the integration for x_i. "However, q is unknown..." should be "However, θ is unknown...."
- Slide 6-166: The wordings of final note has been updated as follows.

> The merit of noncoherent matched filter over coherent matched filter is that the latter actually samples the output before the lowpass filter (i.e., high-frequency signal) while the former samples the output after the lowpass filter (i.e., true envelope signal). Hence, the latter has much higher demand on the accuracy of sampling time.

- Slide 6-168: A note emphasizing the orthogonality of $s_1(t)$ and $s_2(t)$ is added.
- Slide 6-169: The ending "t" is missing in "Hilber". A comment is additionally added aside.

> The text is not clear here! For a noncoherent matched filter, the sampler should be placed after the lowpass filter (i.e., after the square-rooter). The key that the text wish to stress however is that $s_1(t)$ and $s_2(t)$ are orthogonal so they can be viewed as inner-product basis.

- Slide 6-171: "Are" is inserted between "All four" and "independent".
- Slide 6-174: The top "x_{Q_0}" should be "x_{I_1}".
- Slide 6-176: "Are" is inserted between "All four" and "independent", two places.
- Slide 6-178: "counterpart" is misspelled as "couterpart".

- Slide 6-180: “from the distance between the below constellation” is rephrased as “from the below constellation”.
- Slide 6-185: “16 QAM at high SNR” should be added at the end of “4 dB coding gain over”.
- Slide 6-200: “its rotated version” is replaced by “their rotated versions”. “think that” is replaced by “view it as”.