

Description of the columns and the abbreviations used on annotations of ISRUC-Sleep dataset.

- Epoch: a standard 30 second of recording.
- Stage: sleep Stage. Human sleep occurs in periods of approximately 90 minutes, The American Academy of Sleep Medicine (AASM) determined a criteria in the scoring of sleep based on the R&K rules. In adults, sleep-wake cycle is categorized in awake (W), non-rapid eye movement (NREM) and rapid eye movement (REM) sleep stages. NREM sleep is further divided into three stages: N1, N2 and N3, the last of which is also called delta sleep or slow wave sleep (SWS). These stages progress cyclically N1 → N2 → N3 → N2 → REM. The cycles typically happen 4 to 6 times during whole night sleep. The first sleep cycles each night have relatively short REM sleeps and long periods of deep sleep but later in the night, REM periods lengthen and deep sleep time decreases. A summary defined characteristics for each sleep stages according to the amplitude, frequency and shape of the polysomnographic (PSG) signals are presented in Table 1.

Table 1: Summary of EEG, EOG and EMG patterns for different sleep stages

Stages	EEG					EOG	EMG
	<i>Delta</i> ( <i>&lt; 4 Hz</i> )	<i>Theta</i> ( <i>4 - 7 Hz</i> )	<i>Alpha</i> ( <i>8 - 13 Hz</i> )	<i>Beta</i> ( <i>&gt; 13 Hz</i> )	<i>Other</i> <i>EEG patterns</i>		
<b>AWAKE</b>			x	x		0.5-2 Hz	Variable amplitude but usually higher than during sleep stages
<b>N1</b>		x	x		Vertex waves	Slow eye movement	Lower amplitude than in stage awake
<b>N2</b>		x			K-complexes; Sleep spindles	Usually no eye movement, but slow eye movements may persist	Lower amplitude than in stage awake and may be as low as in stage REM
<b>N3</b>	x				Sleep spindles may persist	Eye movements are not typically seen	Lower amplitude than in stage N2 and sometimes as lower as in stage REM
<b>REM</b>		x	x		Saw tooth waves	Rapid eye movement	Low chin EMG tone; usually the lowest level of entire recording

- SaO2: A blood-oxygen saturation reading indicates the percentage of hemoglobin molecules in the arterial blood which are saturated with oxygen. The reading is referred as SaO2. An oximeter gives estimates of arterial oxyhemoglobin saturation (SaO2) by utilizing selected wavelengths of light to non-invasively determine the saturation of oxyhemoglobin.
- HR: heart rate.
- Events: a list of abbreviations
  - L Out: Lights turn off
  - L ON: Lights turn on
  - MChg: Montage Change
  - PLM: Periodic Leg Movement: motion that recurs over and over and the period of time required for each recurrence remains the same
  - Awake: Awakening
  - CH: Central Hypopnea

- CA: Central Apnea
- LM: Leg Movement
- MP: Movement Periodic
- OH: Obstructive Hypopnea
- OA: Obstructive Apnea
- REM, Aw: Awakening in REM
- AR: Arousal, abrupt change from sleep to wakefulness, or from a "deeper" stage of non-REM sleep to a "lighter" stage.
- MH: Mixed Hypopnea (a) - shallow breathing in which the air flow in and out of the airway is less than half of normal--usually associated with oxygen desaturation.